HP Professional

AUGUST 1994
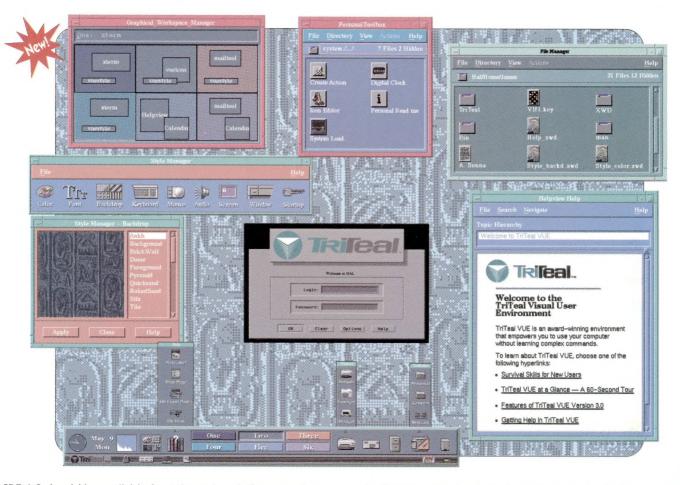
- E-MAIL DELIVERS CLIENT-SERVER PACKAGE
- NETWORK PRINTING GETS REAL
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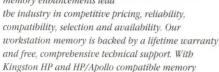*Having built our business around high quality computer memory, we've gone the next step and developed a solid family of storage products. Whether you need internal or external, fixed or removable storage solutions, Kingston has the reliable products for your system.*

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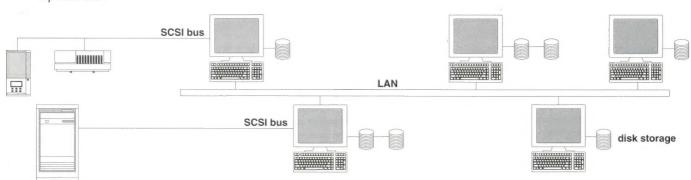
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CIRCLE 122 ON READER CARD

Contents

A u g u s t   1 9 9 4

Vol. 8, No. 8

EDI Graduates To The Internet
24
By Trevor Richards

As the world moves toward electronic commerce, the Internet backbone is increasingly connected to the business of business.

The Reality Of Network Printing
30
By Bill Sharp

Network printing brings interoperability nightmares into the daylight. Someday soon, if HP has their way, you'll lose your keys more often than your print jobs.

Make The Right Connections With E-mail
34
By George A. Thompson

As the first pipeline of distributed computing, E-mail takes your business enterprise-wide.

COLUMNS

HP Professional

*Cover Photo by Andy Caulfield/
The Image Bank*

*H*ewlett-Packard computer systems help General Mills crunch their delivery schedules. So you get your Wheaties even fresher.

"Not only is the HP 3000 open, but it's an excellent, easy-to-use transaction-processing system for business-critical operations."

— Mike Meinz,
General Mills, Information Systems

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The Experts Are On Board

HP Professional Introduces Editorial Advisory Board

I am proud to announce the establishment of *HP Professional*'s first Editorial Advisory Board. The Advisory Board's mission is to help us better serve you. The Board will expand our coverage of the market, evaluate our editorial focus, help us establish contacts and contribute topics for future articles.

The charter Editorial Advisory Board members are:

Patrick A. Adamiak, HP 3000 Product Marketing Manager. Mr. Adamiak is responsible for the marketing of the HP 3000 systems and software including databases, networking and system management. Mr. Adamiak will help us deliver insights into the future of the HP 3000 and how it fits into your enterprise network.

Nigel Ball, Marketing Manager for HP's General Systems Division, and former Systems Marketing Manager of HP's Computer Systems Business in Europe. In addition to supplying information on the HP 9000 strategies, one of the hottest growing markets in computing, Mr. Ball will help us provide you with a look at what's happening in the European community.

John G. Jazwiec, CIO at Barber Coleman. Mr. Jazwiec is responsible for maintaining and developing all information system strategies for Barber Coleman worldwide. The systems Mr. Jazwiec oversees include: HP 3000, HP 9000 and HP workstations, DEC, Stratus, Tandem and IBM midrange. Networks include Novell, Banyan, LAN Manager TCP/IP, DECNet, AppleTalk, Token Ring, SNA, X.25 and Frame Relay.

John R. Logan, Vice President and Co-founder of the Aberdeen Group Inc. Mr. Logan is one of the nation's leading analysts of trends in the computer industry and one of the most influential HP watchers. He consults with senior executives of major enterprises on implementing information systems.

Michael J. Meinz, Principal Technical Consultant at General Mills Inc. With over 27 years at General Mills, Mr. Meinz develops and guides technology strategies while organizing research projects. He is responsible for HP 3000 and HP 9000 systems as well as Unisys, Amdahl, Windows NT, Windows for Workgroups, OS/2 and LAN Manager.

Glenn Osaka, General Manager of HP's Professional Services Organization (PSO). A familiar face and name throughout the HP industry, Mr. Osaka, former GM of the Commercial Systems and Cooperative Computing Systems Divisions, was recently appointed the General Manager of PSO, HP's CSO consulting and systems integration branch. Mr. Osaka brings to our board over 15 years of HP computer experience, including the strategic business planning for HP-UX, MPE/iX and HP's open-systems initiative.

Bard F. White, CIO and Worldwide Director of MIS for Spalding Sports Worldwide. Mr. White is responsible for worldwide information services at Spalding such as computer programming, analysis, data center operations and telecommunications, including telephones and faxes, mail room, copy centers and data security.

I'm sure you agree this is an impressive group. But what do they mean to us? Information, information and yes, more information. And we plan to translate this increased knowledge into improved coverage of HP and the information industry.

Our Board members will provide the necessary insight into HP's products and strategies that you need for your own strategic decisions. As *HP Professional* continues toward being the most informative publication focusing on the HP market, this Editorial Advisory Board moves us further in that direction.

By Charlie Simpson

Charlie Simpson

Create-Your-Own Growth

A recent study of corporate needs reports rapidly falling costs for recording CD-ROMs is producing rapid growth in the CD-Recordable (CD-R) market. According to market research conducted by High Tech Ventures (St. Paul, Minn.), CD-R units will expand from 42,000 in 1993 to 180,000 in 1994, and 1.5 million in 1995.

The reason for such rapid growth is the ability, using CD-R equipment, to create your own CD-ROMs, including audio and multimedia data, for replay on standard CD-ROM drives. With 6 million CD-ROM drives up and running worldwide, and many more selling, opportunities to make good use of CDs are rapidly improving at the same time that the cost of producing CDs is plummeting.

Costs for adding a CD-ROM drive to your system now range from about $150 to $475, with thousands of CD-ROM titles available to run on them. Moreover, the number of companies either currently producing their own CD-ROMs or planning to do so is very high. Most large companies have plans to produce CD-ROMs during the coming months, at least for internal use. These range from annual reports to market information and customer presentations.

According to the study, five years ago a CD-recordable system cost more than $100,000, and by three years ago that cost dropped to $20,000. Today, similar equipment costs $3,000 to $10,000 and is available from a number of companies.

TISC, TISC FROM HP

Telecommunications solutions are the focus of a new facility opened by HP. Because telecommunications is a large vertical market for HP, they formed a dedicated center to provide help with prototyping, integration and demonstration assistance for the telecom industry.

The Telecommunications Industry Solutions Center (TISC) will provide its help in addition to the consulting, systems integration and education programs already underway from HP's Professional Services Organization (PSO). The Center provides assistance for planning, design and testing individual telecommunications user solutions.

PSO will use the center to help customers in technology areas including intelligent networking, broadband for cable and video, distributed object technology and network management tools. HP expects its telecommunications industry partners and customers to use the center to design, configure and test new telecommunications products and services.

Telecommunications firms have worked with HP to improve billing systems, customer care systems and network management platforms. HP's telecommunications customers include NEXTEL, DGT, AT&T, Bell South, GTE, McCaw Communications, Pacific Telesis, U.S.

West, Australia Telecom, Finnish PTT, Telia and Telemex.

RAISING THEIR VOICES

Telecom companies developing and deploying new voice interaction services have more help from HP thanks to an intelligent peripherals (IP) platform.

The goal of the new platform is to provide a consistent delivery vehicle for development of multiple voice capabilities including announcement playing, speech recognition, text-to-speech conversion, fax store and fax forward. By defining the platform, which will be used for the design, simulation and deployment of the new services, HP makes it easier for telecommunications vendors to predict performance of new services before deployment.

HP's IP platform includes two components; a voice processing front-end client and an application server. The voice processing system is an HP-UX PA-RISC computer. It manages network interfaces and does voice processing. It can range from 24 to thousands of ports.

The IP application server also is an HP-UX PA-RISC computer that runs service logic programs, communicates with the voice processing client through a TCP/IP link over LAN or FDDI. If only a small number of ports are needed, the voice processing and server systems can reside in the same system. Prices begin at about $90,000, and will be available this fall.

WHEN YOU'RE HOT...

HP's stream of embarrassingly good quarters continues on. Orders increased 19 percent and net earnings rose 18 percent for the second period of the corporate fiscal year, from February through April 1994. Total sales for the quarter were $6.4 billion, up a billion dollars from the same quarter last year. Among the highlights:

- Orders for the new low-price Vectra VL PCs and new DeskJet models 520 and 560C grew dramatically.
- HP 9000 Series 800 servers and multiuser systems continued strong growth.
- Workstation unit shipments grew, particularly on the low and high ends where the Model 712 and 735/125 got attention, but overall workstation sales declined compared with a year ago.
- Consulting services and HP OpenView network and system software had an excellent quarter.
- Mass storage grew strongly.

Sales for the first half of the fiscal year totaled $12.5 billion which puts HP on track to become a $25-billion corporation for fiscal 1994.

UNIFACE SIX AT YOUR SERVICE

Uniface introduced the latest version of its client-server development environment, Uniface Six. This version includes a model-driven approach, object-based environment, team development facilities and technology-independent deployment. Various components share a central application objects repository. Uniface Six will be available first for Windows 3.1, and later this year for Motif, OS/2 and Macintosh platforms.

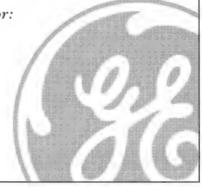*—Sharp's Internet address:*
sharp@cardinal.com

Another View Of OpenView

I just got around to reading the [May 1994 issue] and was glad to see [Tim Cahoon's] article regarding OpenView. We have OpenView Node Manager/UX but need to move to OpenView Interconnect Manager so that we can put passwords on our HP hubs (did I hear the word standard?).

I have had a struggle getting information on the exact differences between the Win version and the UX version as I am trying to decide which platform to use. Even with upgrade pricing, the Win version would be cheaper to buy. I did find the 1,000 node cut-over very interesting because the HP people I've talked to keep pushing the UX version for managing more than a couple of hubs. The other thing they keep saying is that the Win version has less features, but nobody seems to be able to explicitly state what features the UX version has over Windows.

I was also glad to hear something about the NT version as another possibility. It is frustrating that HP doesn't have demos available, although I've heard that they may be working on it.

Thanks again for the article.

Tony Wyland
Network Manager
Messiah College

MOBILE COMPUTING

I just read [George A. Thompson's] recent article on mobile computing in the June 1994 issue. Having just bought an Apple Newton MessagePad 110 a week or so ago, I was especially interested in the piece. Using a pen-based interface seemed so much more natural to me — *after* I got the recognizer somewhat trained. Although it took a while, it does WORK!

Gerry Van Zandt
Associate
Cunningham Communications

STATE OF THE HP 3000

In response to Charlie Simpson's June 1994 editorial: The HP 3000, Long May It Live. I have two 949s and a 987. What can't they do? I'm sticking with them.

Svend Andersen
Manager of MIS
Health Plan of San Mateo

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CIRCLE 354 ON READER CARD

Pre-printed forms are the bane of any MIS organization: when to order more, how many to order, the wasted forms for alignment, headers, trailers and reprints, the storage costs and the operator costs for loading, bursting, collating and distributing.

These problems all vanish with FANTASIA from Proactive Systems (Los Altos, Calif.), a comprehensive, integrated solution for electronic forms, text, bar code and graphics printing on MPE and UNIX systems. FANTASIA's electronic forms allow users to merge data, print when and where you want to, integrate text, graphics and signatures, as well as print to any PCL-compatible laser printer.

The FANTASIA Server package contains a formatter, a TDP-like editor, a PC-based form design and maintenance system and support utilities.

The FANTASIA Formatter processes text and formatting commands to produce high-quality output on LaserJet (or compatible) printers. It can be driven from normal application programs to enhance the quality of all printed output, to include graphics with text in reports and to replace expensive pre-printed forms. FANTASIA also supports special printing applications such as bar codes, MICR for check printing, OCR and condensed printing.

A graphic command language is provided for sophisticated applications. The Formatter can be used to draw line, bar and pie charts. Graphics can be imported from PC software programs and incorporated into a document. FANTASIA lets you produce high volume reports, such as catalogs and parts lists, with a professioanl typeset appearance.

A new Field Fill capability lets users design the form, including fonts and justification. Then with the user's programs — 3GL or 4GL — simply specify the field with the data. The traditional merge overlay approach requires programming changes if the position of the data changes. Field Fill eliminates re-programming.

FANTASIA supports automatic pick-up, formatting and routing of spooled printer output from existing applications. Printer files normally associated with pre-printed forms can have a FANTASIA form applied and rerouted to a laser printer. FANTASIA automatically scans the output queue for such files. $STDLISTs, for example, can be trapped to print two- or four-up to save paper.

FANTASIA PC — the DOS or Microsoft Windows version — enables users to design and produce invoices, purchase orders, expense reports or statements, using a WYSIWYG design. The completed form is then printed as a master or stored for later editing and printing. Forms can be uploaded to an HP 3000 or UNIX system, or downloaded to a LaserJet to be merged with data from PC software. A form can even be "filled in" by the user on-screen and then printed locally. Data fields entered in this way can have their attributes specified (for example, length — whether character or numeric) so that validation is performed.

FANTASIA is available for the HP 3000 (MPE V and MPE/iX) and many UNIX systems (including HP-UX). Forms can be moved between platforms. Prices for the complete system range from $2,500 to $17,000 depending upon system size.

—*John P. Burke,
HP 3000 Editor*

WAnna Be Insignia.

We Finally Figured Out What Wabi Means.

	SoftWindows	Wabi
Number of compatible applications you can run	Thousands	13 ?
Networking capability	Yes — supports NetWare, LAN Manager, Banyan VINES, TCP/IP	Not yet
Number of UNIX platforms you can run them on	Sun, HP, IBM, Digital, and SGI	3 ?
Availability	Shipping	On & Off
Microsoft Windows 3.1 and MS-DOS 6.21 included	Pre-installed	No

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CIRCLE 353 ON READER CARD

What sounds like WABI, but looks and feels and works like a Macintosh? Did you say MABI? MABI (Macintosh Application Binary Interface) is the tongue-in-cheek name given to the Mac emulation technology behind Andataco's (San Diego, Calif.) Liken. Liken allows Macintosh applications to run on various UNIX workstations.

Liken preserves a Mac look-and-feel by letting you run the Mac Finder within an X Window or launch multiple Mac sessions in several independent X Window sessions. A Liken X Window may range in size from 512 x 342 pixels to 1280 x 1024 pixels in portrait, landscape and two-up modes.

"It's a question of interacting with a Macintosh environment on its own terms," says Dave McMillen, developer and now manager of software technologies for Liken. Liken also provides cut-and-paste capability between the Mac operating system and workstation operating system clipboards. Additionally, Liken includes support for popular file transfer protocols like uShare, Columbia AppleTalk, AppleSingle and AppleDouble.

Liken 2.0 began shipping in February 1994 after Andataco, a systems integrator and reseller, acquired the software. Now with AppleShare client support, users can mount file systems that are physically located on a Macintosh or an AppleShare server. Liken 2.0 now also includes TCP/IP support as well as XpressFax and Meeting Maker XP compatibility.

Unlike Apple's own recently introduced emulation product — the Macintosh Application Environment (MAE) — which uses a special version of System 7, Liken actually uses the System 6 (6.0.7) version of the Mac operating system which, prior to System 7, was freely distributed through Apple users groups and BBSes.

McMillen cautions that Liken should not be your first choice if you think you're replacing a Macintosh. "Few people buy our product to just run [Microsoft] Word, Excel or PowerPoint."

According to Jose Rodriquez, MIS director for Northern Telecom (Miami, Fla.), Liken is a "good tool for the casual user." About 15 HP 9000 Series 715 workstations coexist with applications that are "married to the Mac" on his 100-person network.

Although Liken's monochrome-only display is limiting, Rodriquez has been pleased with Liken's networking and ftp compatibility. And support for CE Software's QuickMail makes Liken "compatible with rest of the crop."

Actual performance is dependent on the workstation being used. According to McMillen, by using an HP 9000 Series 712 you can expect better performance than a Mac IIsi; with an HP 9000 Series 735 or 755 you can expect performance similar to low-end and high-end Mac Quadras, respectively.

Liken 2.0 also is available for the IBM RS/6000 AIX 3.2. It also supports IBM Power PC 250 and DEC Alpha. Liken ships with free 60-day support and a 30-day money back guarantee. A fixed license costs $299 while a floating license costs $399.

—George A. Thompson
Technical Editor

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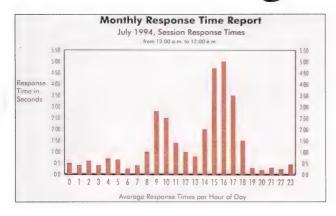
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Syspak Takes The Fear Out Of Working In The Dark

Monthly Response Time Report
July 1994, Session Response Times
from 12:00 a.m. to 12:00 a.m

Response Time in Seconds

Average Response Times per Hour of Day

With Syspak software, Carolian Systems (Mississauga, Ontario) brings its interpretation of "lights out, hands off" data center management, Operation by Exception (OE), to performance monitoring. Syspak's design is based on the assumption that few people have time to watch a performance monitor waiting for something to happen.

Syspak continuously monitors the system for you. It alerts you, through a variety of means, only when actual performance falls outside defined, acceptable values. In addition to the automatic exception alerts, Syspak monitors and logs general system performance 24 hours a day and automatically generates daily, weekly, monthly and trend graphs that can be printed directly on many standard system or slave printers.

Syspak also includes Sysview, a complete, online analysis tool. Finally, Syspak includes a module called Replay, which can best be described as Sysview for historical data.

Syspak was designed for quick, easy installation. It has built-in intelligent defaults that enable Syspak to be up and running, collecting data and monitoring performance usually within 15 minutes. Installation does not affect production. Alert values can be changed as conditions change and as experience is gained.

Syspak's alert function monitors your system and notifies you immediately of potential performance problems before they have a chance to develop. Notifications can be sent to specific users, the system console or even to a pager using Carolian's optional Advisor product. Alerts are logged and can be viewed at a later time.

Syspak's automatic reporting feature gives you a set of customized graphic reports when you want them. Specify the resource (for example, CPU usage) and the time frame, and Syspak will generate a report on that resource for every specified time period. You also can obtain individual reports interactively on demand. Syspak graphs can be printed on any HP LaserJet II, III or 4 and on any HP 256x printer.

With Syspak's log files, you can review past performance by producing reports, as well as zoom in on a specific day and time using Syspak's Replay feature. Syspak's logging process, SPLOG, runs as a background job and periodically (user defined) takes snapshots of your system's activity. These log files can consume a lot of disk space over time so Syspak provides a means for automatically managing the log files. AutoTrim controls the number of log files kept on your system automatically. Syspak can also automatically archive files to tape for later analysis.

Sysview isolates specific bottlenecks or monitors general resource usage. Sysview's global and process-level displays help you determine the impact of specific processes on overall performance. Global displays monitor CPU, memory and disk.

Replay allows you to review log file snapshots of performance data. Replay uses the same screens as Sysview. It allows you to review what was going on when an alert was issued or when system performance complaints were generated.
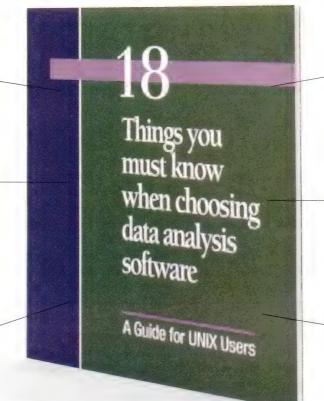
Syspak runs on MPE V and MPE/iX systems and is available for a limited time for $995. Annual support is $495.

—*John P. Burke,*
HP 3000 Editor

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"We want to restore mainframe levels of control while dramatically reducing the cost of remote systems management."

Franklin Moss
President and CEO
Tivoli Systems Inc.

Patience. Foresight. System management solutions. When it comes to distributed client-server architectures, all three are in short supply. At $60 million, systems management software products represent a small fraction of the overall multibillion dollar client-server market. By 1998, however, companies like Tivoli Systems (Austin, Texas) will be supplying system management products in a projected market of $4.5 billion.

Founded in 1989, "Tivoli was one of the first companies to achieve broad recognition in the market," says Richard Villars of IDC (Framingham, Mass.). The Tivoli Management Environment (TME) 2.0 is based on well-established standards promoted by industry groups like the OSF, OMG and USL.

Tivoli's Management Platform conforms to the OMG's CORBA 1.1 specification and its APIs were endorsed in January 1994 by X/Open as a new distributed system management standard. Using object-oriented technology, the Platform serves as the core software for Tivoli and third-party applications. Tivoli's Application Extension Facility (AEF), Event Integration Facility (EIF) and Advanced Development Environment (ADE) toolkits provide for application customization, integration and development. "We want to restore mainframe levels of control [in distributed environments] while dramatically reducing the cost of remote systems management," says Franklin Moss, Tivoli's president and CEO.

Although deployment applications have been the company's traditional focus (Tivoli Admin, Tivoli/Courier and Tivoli/Print), Moss says the company is now "concentrating on operations management in equal measure." Consequently, Tivoli/Workload, Tivoli/Epoch Backup and Tivoli/Enterprise Console were introduced this past February.

Ultimately, Moss envisions Tivoli providing solutions "where all systems are managed from a single console and operating on multiple platforms." For example, the Enterprise Console is a rules-based event manager that acts as a central point for messages and alerts. The Enterprise Console is integrated with HP's OpenView, its network management product, as well as with similar products from IBM, Sun and Novell.

Because Tivoli's integration with other vendors' products is so important, Moss says Tivoli practices a certain "vendor agnosticism" when it comes to working with over 25 technology partners. Although Tivoli's largest percentage of current TME sales come from HP OpenView (HP-UX) customers, TME 2.0 will run on the following platforms: Solaris and SunOS, AIX, Motorola SVR4, DG/UX, AT&T GIS System 3000 SVR4, Novell NetWare and Windows NT. Client platforms include DOS/Windows and Windows NT.

Although Tivoli is well-known for its technology, Moss doesn't want to be typecast as a technocentric company. "We've been shipping end-user products since 1991." In fact, this year Moss predicts that privately-held Tivoli (with 1993 revenues of $13 million) will sell about $25 to $35 million worth of software to Fortune 500 companies. And with consultants in every major office in the United States, Tivoli's Professional Services helps ensure that companies, such as discount broker Charles Scwhab, GTE Data Services and the Prudential/UK are satisfied.

That's a step in the right direction according to IDC's Villars who thinks that Tivoli now needs "to develop their sales and consulting skills" to make the transition to a product-driven company.

Moss recognizes the task of providing system management solutions is a challenging one. "You just don't throw something over the transom and say 'good luck.' We have a new program in place to recruit and encourage new VARs."

—*George A. Thompson,*
Technical Editor

CIRCLE 480 ON READER CARD

Accelr8 Follows Migratory Patterns

Accelr8 Technology Assists Customers With VAX/VMS To UNIX Migration

"We believe that UNIX is going to be adopted when the VAXes run out of horsepower."

Robert Hickler
President
Accelr8 Technology Corp.

Time eventually catches up with the best of machines. As fond as DEC users may be of the VAX/VMS platform, sooner or later they will have to move. What will their target platforms be? Robert Hickler, president of Accelr8 Technology Corp. (Denver, Colo.), took a good guess in 1987 when the company was formed.

"We set out to help people migrate from VMS to UNIX and RISC-based processing," Hickler says. "At the time, we saw that RISC technology was providing 10 times the price/performance of the VAXes, and felt that the price differential would be a strong attraction to VAX users. As it turned out, all the RISC boxes are UNIX, so we didn't chose UNIX as much as the industry chose it."

According to Hickler, there are from 400,000 to 600,000 aging VAXes in use today. "I've seen market research from DEC showing that of the existing VAX installed base, one-quarter to one-third intend to move to a UNIX box."

Recent bad news from DEC has made an alternative long-term computing strategy all the more urgent for DEC customers, in Hickler's opinion, and as a result, they have become more receptive than ever to RISC and UNIX, and in particular to the HP 9000 HP-UX platform.

Aaron Albert, executive vice president at RGTI (New York, N.Y.), concurs. RGTI, a software developer and systems integrator, has offered a complete warehouse management system since 1971, first for DEC's PDP-11 and then for VAX/VMS. RGTI was a VAX/VMS shop exclusively until 1991 when, in response to customer demand, it migrated its products to UNIX using a suite of Accelr8 products.

The Accelr8 products, marketed under the trademark Open Software Solutions, fit into three categories: user productivity tools, software migration tools and data transfer utilities. Accelr8 also provides consulting and support services.

The user productivity tools include Open DCL, a command interpreter which allows VMS users to operate UNIX systems with familiar VAX DCL commands. Another, Open TPU is an editor that includes features and functions that are compatible with the VMS TPU editor.

The application migration products include Open Libr8, a library of callable routines, native to and optimized for UNIX, using the same naming conventions as the VAX runtime system. The Open Acclim8 FORTRAN converter automates the migration of VMS-specific FORTRAN applications from VMS to UNIX. And, Open BASIC is a retargetable compiler that reads VAX BASIC and generates portable C source code.

The data sharing utilities include Open Transl8, a record-oriented file transfer and conversion utility that moves binary and text data between VMS and UNIX systems on a network. And, Open Integr8 is a record access system that allows data sharing between binary incompatible systems on the same network.

Though RGTI has used Open Libr8 and Open DCL, it currently uses one Accelr8 product, FMS/UNIX, a plug-compatible replacement for DEC's FMS forms management software. "It takes something which essentially is a VMS-only product and makes it available in the UNIX world. It's functionality and quality are fine, and the support from Accelr8 is very good," says Albert.

Since February 1994, Accelr8 has joined HP in a joint marketing program designed to provide a path for VAX users moving to the HP-UX world. "HP is making its sales force and potential customers aware of our products as a way of bridging off VMS and on to HP systems," Hickler says.

A strong interest in the HP-UX platform among VAX/VMS users is something Albert also has discovered. "If the two players with the biggest market share are IBM and HP, HP is the technical choice," he says.

—Sam Dickey
Contributing Editor

Since introducing MAC-PAC® OPEN software for UNIX® there's been some hissing from the competition.

There are a lot of lofty promises made by manufacturing software vendors. But when you consider how little evidence supports them, their claims start to sound a bit inflated.

MAC-PAC OPEN isn't built on a promise. It's built on some of the best business practices of today's industry leaders. It's built on proven

technical architecture for true hardware and database flexibility. It's built on the unsurpassed industry experience of Andersen Consulting.

Which means that MAC-PAC OPEN, available on IBM® AS/400® or UNIX hardware platforms and databases, can actually deliver exactly what manufacturers really need. A robust,

integrated, full-enterprise solution.

So it's no wonder the competition is doing so much hissing.

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Trevor
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Mechanisms

For EDI Delivery

Evolve To Promote
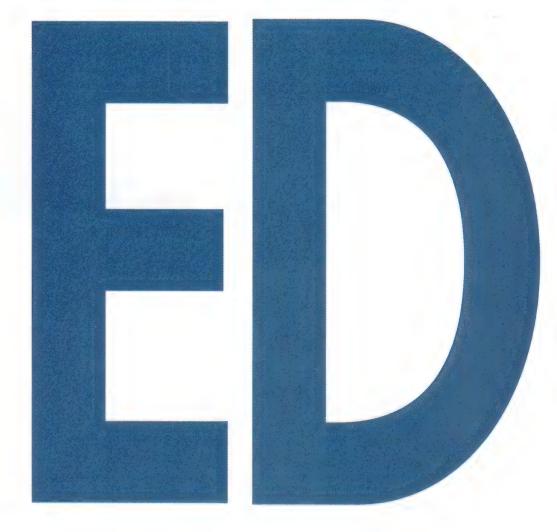
The Acceptance

Of The Internet

As Part Of A

Global Commerce

Network.

ED

Originally designed as a network to enhance communications and file sharing among its users, the Internet would seem to be an unlikely medium for delivering Electronic Data Interchange (EDI) transactions. Yet, the Internet is currently transporting EDI data between organizations in certain industry sectors and there are plans for many more to become involved in the near future.

Using the Internet as a communications medium for the transfer of EDI transactions has been pioneered by the U.S. Federal Government and the educational community. The experience of the educational community in establishing a method to transfer student transcripts between K-12 schools and colleges provides an ideal case study to examine the current state of EDI data transfer via the Internet.

The transfer of student transcripts between educational establishments has traditionally been a source of much frustration for all the parties involved. Some pioneering states, such as Florida and Texas, decided to develop their own file formats for exchanging transcripts between K-12 schools and colleges. Exchanging an electronic form of the student transcript within the states proved to be highly successful.

In 1988, the American Association of Collegiate Registrars and Admissions Officers appointed a task force to determine how student transcripts could be ex-

Graduates TO THE Internet

changed nationally. The task force later adopted the acronym SPEEDE (Standardization of Postsecondary Education Electronic Data Exchange).

A parallel task force was created by the National Center for Educational Statistics for transcripts of pre-kindergarten to 12th grade. This task force adopted the acronym ExPRESS (Exchanging Permanent Records Electronically for Students and Schools). The two task forces then collaborated to define a single transaction set, the Student Educational Record (130), which accommodates K-12 and college transcripts. In February 1992 this transaction set, which contains the joint SPEEDE/ExPRESS format, was formally adopted as an ANSI ASC X12 standard.

Florida still leads the pack in terms of transcript activity. The K-12 schools and colleges still use the earlier proprietary *faster* format for transcripts exchanged between schools within the state, and they are able to convert to and from the X12 Student Educational Record transaction set format for out-of-state traffic.

In Texas, many schools still use the internal TXETN format and communicate with each other via the GE Information Services (GEIS) value-added network (VAN). However, the Austin Independent School District and the University of Texas at Austin have successfully exchanged the X12 Student Education Record transaction set over the Texas Education Network (TE-

NET), which is an Internet-based network available to all public schools in Texas. There also are Internet-based regional development projects underway in California and Washington.

CAN INTERNET DELIVER?
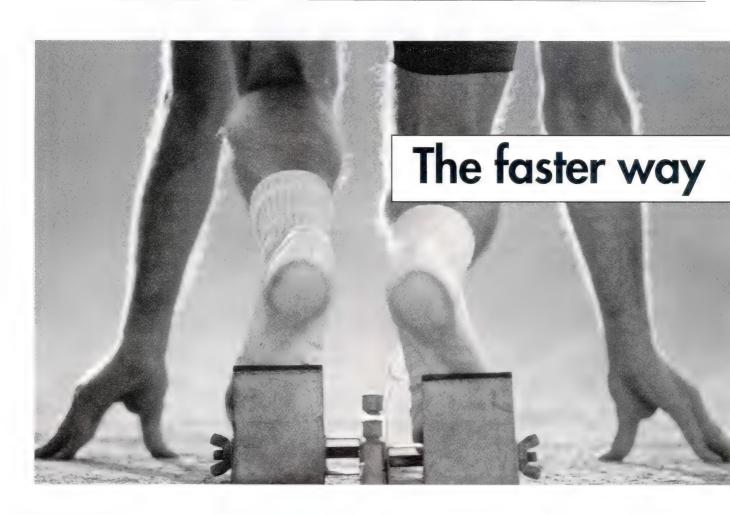
A GREAT DEBATE IS currently taking place within the educational community to determine which delivery systems should be used for exchanging transcripts. The least desirable of the three options being considered is the Internet's File Transfer Protocol (ftp). If the computers of both educational establishments are connected to the Internet, one establishment can logon to the destination computer and upload the transcripts using ftp. This method requires the sender to logon to each of the establishments that transcripts need to be transferred to, which is likely to be impractical in full production usage.

The second delivery mechanism used is the commercial VANs which provide a secure and reliable delivery mechanism to their users, but they do charge users incrementally by the amount of data transmitted. Some commercial VANs also require the user to maintain a master file on the network, which could become a massive maintenance task.

The last delivery mechanism which is currently used in education is the Internet's Simple Mail Transfer Protocol (SMTP). This delivery method is appealing to educational establishments because it supports the addressing and delivery of EDI data to the over 100,000 K-12 and post-secondary educational establishments. And, it currently has no incremental charges for the amount of data exchanged. The drawbacks to Internet mail as a means of delivering EDI data are a perceived lack of reliability and security, as well as a lack of a mechanism to distinguish between messages containing E-mail and those containing EDI data.

Another user of EDI over the Internet is the Department of Defense (DoD). The DoD's experience suggests that VANs and Internet mail can interoperate to provide a seamless environment in which each partner can select a VAN or the Internet as their communications gateway. Lawrence Livermore National Laboratory (LLNL; Livermore, Calif.) has been running a pilot project for the Wright-Patterson Air Force Base to enable their procurement process to be operated via EDI.

Procurement transactions are collected via the Defense Data Network, a private Internet network, and collected at the EDI hub gateway located at LLNL. The hub gateway connects to several commercial VANs via X.25/X.400 or Internet mail. The fact that at least some of the commercial VANs currently have

The faster way

gateways for Internet mail suggests that this will be a feature offered by all commercial VANs in the near future.

Internet mail currently carries EDI data in much the same way as it is carried in X.400 messages. The body of the message contains a single EDI interchange. The message is routed via the sender and receiver identifiers on the message header. In 1988, the X.400 standard was extended to allow multiple objects, or body parts, to be carried within a single X.400 message. This means that a text message, a CAD drawing and an EDI interchange can be encapsulated in an X.400 message. The receiving messaging application identifies the message by the identifier attached to each object where it is routed to the appropriate applications. Internet mail has a similar extension to its simple mail capabilities called Multipurpose Internet Mail Extensions (MIME). The methods of identifying EDI objects in a MIME message are being defined by IETF-EDI, a working group of the Internet Engineering Task Force (IETF).

The Privacy Enhanced Mail (PEM) standard will address the security concerns for transferring EDI data via the Internet. PEM is an Internet standard which uses a combination of security techniques to assure privacy, integrity and non–repudiation of messages. With PEM, each part of a message, or the entire message, can be digitally signed or encrypted with the Data Encryption

SURFING FOR EDI INFORMATION

There are currently three mailing lists on the Internet which address EDI-related topics. You can subscribe to these mailing lists from any E-mail service (America Online, CompuServe and MCI Mail) which has an Internet E-mail gateway.

The first mailing list, EDI-L, is a general discussion group for all matters relating to EDI. You can subscribe to this mailing list in the following manner: send a message to the Internet address listserv@uccvma.ucop.edu which contains "subscribe EDI-L first-name last-name" in the body of the message.

The second mailing list, IETF-EDI, is a discussion group which is primarily focused on revising the MIME enveloping standard to include EDI objects. You can subscribe to this mailing list in the following manner: send a message to the Internet address listserv@byu.edu which contains "subscribe IETF-EDI first-name last-name" in the body of the message.

The last of these mailing lists, SPEEDE-L, is a discussion group for all parties interested in the development of ANSI ASC X12 Transaction Sets for the educational community. You can subscribe to this mailing list in the following manner: send a message to the Internet address listserv@vtvml.cc.vt.edu which contains "subscribe SPEEDE-L first-name last-name" in the body of the message.

Standard (DES) and Public Key cryptography.

Concerns about reliability and accountability of the Internet will begin to disappear once the National Science Foundation network (NSFnet) backbone has been fully replaced by commercial network service providers. The vast majority of EDI transactions are communicated today via a single VAN or through multiple VANs. There is no reason to believe that either VANs or Internet commercial network service providers will predominate in the future. Rather, we will see a mixed environment where VANs, Internet service providers and X.400 gateways can provide a choice of services to use as their primary connection.

COMMERCIAL ACCESS

RECENT DEVELOPMENTS suggest that the scope of electronic commerce on the Internet will include online review of advertising, product literature and online order entry. For example, CommerceNet is envisioned as a low-cost, high-speed regional network piggy-backing on the Internet which will use leading-edge technologies, like multimedia software, to create an open, electronic marketplace. One of the primary projects in which CommerceNet is involved is an Electronic Industry Pilot, which connects the Silicon Valley's electronics industry into an integrated marketplace for manufacturers, such as HP and their suppliers.

A company using CommerceNet services would start by accessing a high-level screen containing top-level directories organized by companies, industries, people, government services or information services. From this access point, the user could view online catalogs, review product literature, study detailed specs in text or graphic form, and download CAD models.

The Internet will have a major role to play in the area of electronic commerce if the current concerns with reliability, accountability and security can be alleviated. The pervasiveness of the Internet also could offer new opportunities to exploit technologies, such as multimedia, that the traditional communication vehicles for EDI data are currently unable to support.
—*Trevor Richards is the Integration Services manager at Trinary Systems (Austin, Texas). He can be reached on the Internet at trevr@bga.com.*

INTERNET THROUGH THE AGES

The Internet was born 20 years ago to link ARPAnet, the U.S. Department of Defense (DoD) network, to other radio and satellite networks. The communications protocol that they used — the Internet Protocol (IP) — was designed to operate as a peer-to-peer computer network where the computers had the responsibility of ensuring that messages were delivered. The academic and research institutions using the Internet soon began encouraging their colleagues to get connected, and demand on the network steadily increased.

By the mid 1980s, Ethernet LANs were being installed and organizations wanted to connect a whole LAN rather than just a single computer to the rapidly expanding ARPAnet, which promoted an even faster growth rate in the number of connected users. In the late 1980s, the National Science Foundation (NSF), an agency of the U.S. government created NSFnet, an ARPAnet-like IP-based network, to connect regional educational networks to five major universities which maintained supercomputer centers. This allowed any university connected to their local or regional network to access these supercomputers for research.

The NSF then promoted universal educational access by providing incentives for four-year colleges if they offered access to their staff and students. Now that most four-year colleges are connected, primary schools, secondary schools and libraries are being encouraged to get Internet connections as well.

AT YOUR SERVICE

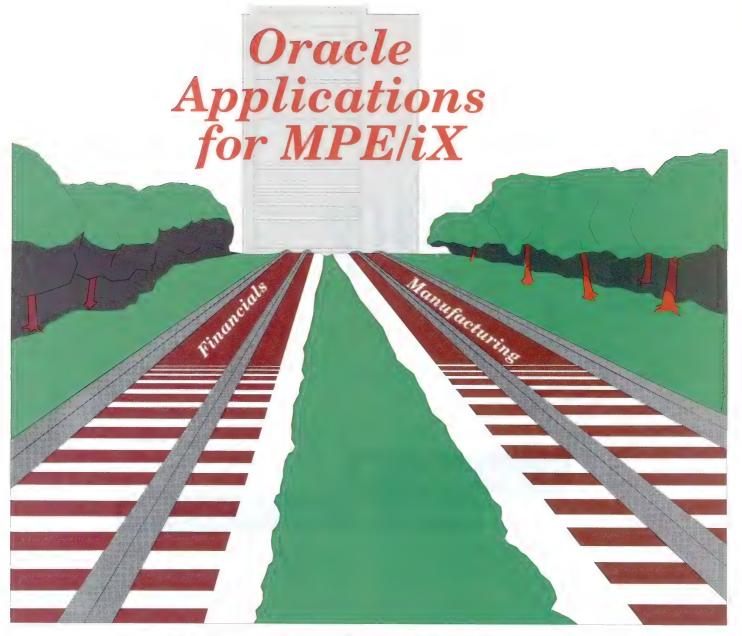Today, the Internet backbone consists of various federal, regional, educational, campus, foreign and commercial network service providers which are IP-based. All of these systems cooperate to form a seamless network for their collective users.

Also connected to the Internet backbone are many non-IP-based networks, such as America Online and BITNET, which act as gateways to the Internet. These systems provide various levels of Internet support for their users. Much of the current traffic on the Internet goes directly between commercial network service providers without traversing any government-funded resources.

In the near future, NSFnet will be replaced as the primary backbone for the Internet because its users, such as universities and high-speed supercomputer sites, will receive funding that will allow them to obtain services from commercial network service providers instead.

The Internet is currently governed by the Internet Society whose sole purpose is to promote global information exchange using Internet technology. Membership in this organization is voluntary, much like the U.S. EDI standards organization ANSI ASC X12. The Internet standards themselves are blessed by a group of invited volunteers who form the Internet Architecture Board (IAB).

If a new standard needs to be developed, or a current standard needs maintenance, another volunteer organization called the Internet Engineering Task Force (IETF) will form a working group to produce a recommended solution. Once a consensus has been reached and the IETF approves the recommendation, the IETF will pass it to the IAB, who can then declare the recommendation as a standard which will be announced via the Internet.

The *Reality* of NETWORK PRINTING

Network Printing Shifts From An Ideal Solution To A Real Solution

When I think back on it, it wasn't so bad taking that half-mile trip to the system printer to get my documents. That wasn't the part that bothered me. After all, I was able to talk to friends along the way and catch up on the news.

Actually, the thing that bothered me about the hike to get my printed papers was that along the way, I had to pass by no fewer than six other printers that were closer to my desk, and I couldn't print to any of them. Some weren't on the network because they were dedicated to some politically important person who never printed to them. Some were tied to another network; I think mine was linked into Curley, one of the printers was on Larry, while another was attached to Moe.

That was the irksome part. I could practically rest my feet on a perfectly good printer; I just couldn't print to it from my desktop system. And usually, when I had a really big job to print — the kind that is so big it takes a small truck to haul back all the paper — without fail the footrest printer next to me would be sitting idle. I did an impromptu study of this problem by walking around talking to those who sat by printers. I got answers like:

B I L L • S H A R P

"No, that's not my printer. It can't be. It would make too much sense for that to be my printer. My printer is in the next building."

"Yes, that's my printer, but it doesn't work. It's incompatible with our network because it doesn't have the right protocols. So I just keep it here as a status symbol. People are very impressed that I have one so close to my desk. My real printer is 100 yards away."

The real world is a tough place where not everything goes as we envision it. Workable solutions sometimes show up much later than the visions some people sell us when they want us to open our wallets and dump the contents into their wallets. Fortunately, network printing is moving out of the vision category and into the real world. And it happens to be worth some real money. You are spending lots on print server functions. In fact, the print server market is expected to reach $2 billion by 1997.

Jeff Freeman, director of product management at Emulex Corp. (Costa Mesa, Calif.), wrote a paper on printer server performance that makes several points worth noting.

First, the complexity of printed documents including graphics and special characters has increased so much that the data required for printing a single page can be 100 times what it was a few years ago. Instead of requiring data transmission rates of 10,000 bits per second (bps), printers now may need up to 1 Mbps. This places very different demands on the network. Depending on the performance you require, this may limit your choices for components that sit between you and your printer, any one of which could become a bottleneck.

Second, the protocol used for printing also affects network printing performance. The fastest is TCP/IP. Using TCP/IP on UNIX, you could send a print job directly to a printer on the network without going to a file server first. This is a major reason for the speed advantage of this protocol. Another reason is the flexibility of TCP/IP in fitting the message size and other parameters to the network.

Third, in order of speed, common printing protocols include:

Table 1

Protocol	Throughput (characters per second)
TCP/IP	100,000-200,000
NetWare IPX/SPX	100,000
LAN Manager	100,000
AppleTalk	25,000 (may be improving)
DEC LAT	15,000 (standard DEC software)

Finally, file servers may be the most common culprit in sluggish network printing. File servers are saddled with many tasks including file I/O, print management, queuing and gateway functions. An overloaded file server will hold up print jobs and run up your blood pressure. In fact, Freeman points out that printers on a network require less file server CPU time than a printer linked directly to that server; printing on the network may actually be faster than a directly linked printer.

But getting to the network can be a handful. Take the case of David Mack, manager of computer operations for Dreyers Grand Ice Cream (Oakland, Calif.). Dreyers had been using HP 3000 gear for years, but had decided to make a move to a less centralized system. But, the HP 3000 Model 977 was not about to go away — it simply became a node on the new network of PCs. The system also moved from leased lines with dedicated serial connections to Frame Relay with network connections.

Getting the users onto the new system presented relatively few problems for Mack. "We used to have an HP 3000 and its environment," says Mack. "Now we have a PC network, so what we want is everything talking on that network." For most devices, including the HP 3000 that was simple. But the HP 3000 system printers had been used with dedicated lines before the big change, and printed only from that system. Mack wanted to be able to use the same printers to take print jobs from anywhere on the network.

The solution Mack found was NetPrint92 from MiniSoft (Snohomish, Wash.). NetPrint92's NLM communicates with NetPrint92, which runs on the HP 3000. The NLM moves HP 3000 print spoolfiles to a print queue on a Novell network file server, converting print file characteristics from the HP 3000 designations to their Novell equivalents. Now the printers not only print directly from the network for jobs coming from any number of points on the network, but can still receive HP 3000 print jobs in converted form over the network.

The MiniSoft product, says Mack, "sweeps through the HP 3000 every five minutes, reading off the spoolfiles and sending the converted files to the same printers across the new network. This was a heck of a lot easier than I am used to these things being. It works like a charm."

According to Doug Greenup, owner of MiniSoft, "HP has no tool to do that right now. Customers are trying to print through terminal emulators, they use print screen and log bottom, but for HP 3000 folks, there is no simple capability for network printing. HP 3000 users are transaction and batch oriented."

For the users at Dreyers, network printing means increased flexibility in getting the job done, savings over buying yet more printers (many of which will sit idle much of the time), and increased speed in just getting something printed.

Greenup says that for almost everybody, network printing turns out to be a big plus. At MiniSoft, he says, "We have printers on every floor. I'm not stuck with going downstairs; I can do it right here." Then he adds somewhat ruefully, "Now

for me that may be bad, huh? My doctor wants me to exercise more."

HP AND BANYAN SYSTEMS

HP HAS DONE ITS OWN work to help further the cause of network printing. HP and Banyan Systems Inc. (Westboro, Mass.) are working in partnership to help both firms perform more capably on the network.

For example, Banyan's Enterprise Network Services (ENS) will be integrated with HP's HP-UX operating system. In addition both firms will work specifically to improve network printing speeds, as well as integrating network management and system administration capabilities

Banyan and HP will also work to certify HP platforms and storage devices for use with Vines, Banyan's ENS and NOS product. Finally, the two firms will develop drivers for RAID and SCSI adapters on HP platforms.

HP also added some new printers to its lineup for networked systems. HP introduced the HP 5000 Models C30 and C30D cut sheet printers for medium-volume printing. Both printers

NETWORK PRINTING VENDORS

Agile 875 Alfred Noble Dr. Hercules, CA 94547-1899 (510) 724-1600 **CIRCLE 344 ON READER CARD**	Agile's 4550 E/PS is a standalone Ethernet printer server. Agile's 5250 ALLY is a protocol converter printer interface controller.
Ahearn and Soper Co. Inc. Facit Division 540 N. Commercial St. Manchester, NH 03101-1107 (603) 647-2700 **CIRCLE 343 ON READER CARD**	Facit PowerPlus-408 is a high-volume printer.
Axis Communications 99 Rosewood Dr., Ste. 170 Danvers, MA 01923 (508) 777-7957 **CIRCLE 342 ON READER CARD**	NPS 530 and 650 are multiprotocol Token Ring print servers.
Banyan Systems Inc. 120 Flanders Rd. Westboro, MA 01581 (508) 898-1000 **CIRCLE 341 ON READER CARD**	Banyan is in the midst of a co-development effort with HP's Boise Network Printer Division to speed network printing and integrate network management and system administration services.
Belkin Components 1303 Walnut Pkwy. Compton, CA 90220 (310) 898-1100 **CIRCLE 340 ON READER CARD**	ParaNet II is a printer sharing device for up to four printers.
Dataproducts Corp. 6219 De Soto Ave. Woodland Hills, CA 91367 (818) 887-8000 **CIRCLE 339 ON READER CARD**	Typhoon 30 is a high-speed, high-volume network printer.

use the same PCL printer language as the LaserJet and high-end HP 5000 printers.

The Model C30 simplex printer provides 30 ppm speed and 300 dpi resolution. The Model C30D provides the same capabilities, and includes duplex printing for two-sided printing at up to 15 double-sided ppm.

The printers are designed for medium-sized data centers and production houses with print volumes of 75,000 to 200,000 pages per month. Design of the printers features few moving parts through the use of a light-emitting diode imaging array. The printers also have a straight paper path for single-side printing, reducing paper jams and misfeeds.

Most printer components, including photoconductor, developer, fuser toner and cleaning unit are packaged in cartridges for easy customer maintenance. The C30 costs $15,950, and the C30D costs $21,340.

Probably the most exhilarating news about network printing is the fact that within the next three years, most of us can stop thinking about it. This topic, like many other problem areas of computing, will be resolved to the satisfaction of most users and simply become an assumed part of the operating system.

Kevin Burbank, market planning manager at HP's Roseville

Networks Division (Roseville, Calif.), agrees with this view, one which follows the apparent direction of HP. Burbank notes that for HP the evolution began about three years ago with the introduction of the JetDirect print server card and the LaserJet IIIsi printer. These products allowed users to run a printer remotely across the network.

Right now, network printing is tackling interoperability and multiple operating systems. "Printers now switch automatically between environments so users don't have to worry about it," says Burbank. "The printer detects the type of job and handles it accordingly."

In the near future, HP and other vendors will strive to make printing over the network as easy as printing on a personal printer. These improvements will include wider adoption of standards such as a printer-specific management information base for network management.

In the meantime, HP also will continue giving away lots of software with its printers to make integration as simple as possible.

Digital Products Inc. 411 Waverly Oaks Waltham, MA 02154 (800) 243-2333 **CIRCLE 338 ON READER CARD**	NETPrint/104, NETPrint/200 and JETXPrint/104 allow users of VINES, UNIX, EtherTalk and NetWare to use the same printers.	Meridian Technology Corp. 11 McBride Corporate Cntr. Dr. Ste. 250 Chesterfield, MO 63005 (314) 532-7708 **CIRCLE 331 ON READER CARD**	TCP Crossprint is a NetWare Loadable Module that provides access to printers on NetWare and TCP/IP networks.
Emulex Network Systems 3535 Harbor Blvd. Costa Mesa, CA 92626 (714) 662-5600 **CIRCLE 337 ON READER CARD**	NETQue is a four-protocol printer server. NETJet is a multiprotocol printer server Ethernet interface card that fits directly into the internal bus of a printer or plotter.	Minisoft Inc. 312 Maple St., Ste. A Snohomish, WA 98290-9000 (206) 568-6602 **CIRCLE 330 ON READER CARD**	NetPrint92 is a host-based network print spooler.
Extended Systems P.O. Box 4937 Boise, ID 83711 (208) 322-7575 **CIRCLE 336 ON READER CARD**	ExtendHub ESI-4216A allows LAN administrators to connected up to 16 PCs and four printers directly to an Ethernet network.	Olympus Image Systems Inc. 145 Crossways Park W. Woodbury, NY 11797-2087 (516) 364-3000 **CIRCLE 329 ON READER CARD**	Deltis PagePlex 18 and PagePlex 24 are network printers for workgroup and department use.
Hewlett-Packard Co. 3000 Hanover Street Palo Alto, CA 94304 (800) 637-7740	HP 5000 model C30 and C30D midrange printers for use with either HP 3000 or HP 9000 business servers.	Pacific Data Products 9125 Rehco Rd. San Diego, CA 92121 (619) 552-0880 **CIRCLE 328 ON READER CARD**	Pacific DirectNet EX is a multiprotocol external print server for Ethernet networks.
JetForm Corp. 800 South St., Ste. 305 Waltham, MA 02154 (617) 647-7700 **CIRCLE 334 ON READER CARD**	JetForm Server allows users to add forms output capability to existing network printers.	Wilco AMS Inc. 3223 Ocean Dr. Vero Beach, FL 32963 (407) 234-8161 **CIRCLE 327 ON READER CARD**	NETQUE 3000 is a low-cost HP 3000 network printing solution.
Linksys 16811A Millikan Ave. Irvine, CA 92714 (714) 261-1288 **CIRCLE 333 ON READER CARD**	Ethernet PrintServer EPS3 allows users to share one serial and two parallel printers. MegaBuffer provides temporary data storage between computer and printer. MultiShare enables up to 24 PCs to share up to eight printers.	Xerox Corp. 800 Long Ridge Rd. Stamford, CT 06904 (203) 968-3000 **CIRCLE 326 ON READER CARD**	Documents on Demand was developed in conjunction with major universities to provide a means for capturing, storing and printing customized course packets or books on-demand. Includes HP Model 40 optical jukebox.
The McLean Group 1259 El Camino Real Ste. 116 Menlo Park, CA 94025 (415) 638-1100 **CIRCLE 332 ON READER CARD**	L-15X is a multiprotocol Ethernet printer server for HP 5000 Series C30 and C30D printers. L-25X provides HPIB protocol conversion.		

Make The Right

Connections

With

E-MAIL

Distributed computing. That's the ticket. But how do you get there? You may not know it, but you're closer than you think. The first pipeline has already been laid. It's common across mainframe, minis, UNIX and LAN computing platforms. You already use it extensively for sending interpersonal text-based messages, but increasingly documents, images, audio and video are all coming at you via E-mail.

According to market research conducted by the Electronic Messaging Association (EMA): In 1993, 55 percent of the Fortune 2000 were using electronic mail; the total number of E-mail sites grew 83 percent in the last two years; LAN-based E-mail is growing, particularly at branch sites; and reflecting the impact of EDI, messages to other companies have nearly doubled since 1991.

Over the years, a hodgepodge of disparate E-mail systems have developed. Mainframe E-mail systems such as HPDesk, IBM PROFS, and DEC ALL-IN-ONE and VMSmail have provided employees in large enterprises with a way of keeping in touch. Within the past several years, departmental workgroups have been communicating through LAN-based E-mail systems like Lotus cc:Mail or Microsoft Mail. Added to

GEORGE A. THOMPSON

that mix are UNIX-based workstations using TCP/IP protocols and any number of assorted gateways and hubs to the outside world (for example, MCI, CompuServe and the Internet).

Before companies and their employees can take full advantage of the communal E-mail zeitgeist however, IS managers must figure out how to logically and physically link all those different hosts, PCs, workstations and even Macintoshes into an enterprise-wide messaging network.

"Interoperability and migration are the keys," according to Ron Rassner, director or technology research for Wingra Technologies (Madison, Wis.). The problems, according to Rassner, are the increasing administrative burden of supporting multiple point-to-point gateways; performance, because passing through multiple gateways is slow; lack of binary file transport; and synching directories." And he is aware that IS managers want three significant services from an intelligent messaging hub: directory services, management services and document conversion.

Before companies take advantage of E-mail, IS managers must logically and physically link all those different hosts, PCs and workstations into a messaging network.

In the DEC VAX world, Wingra's Missive is a system-to-system electronic messaging switch that connects VAX-based systems to PC LANs (Lotus cc:Mail and Notes, DaVinci eMail, Microsoft Mail, Novell GroupWise 4.1 and BeyondMail). Missive provides direct links to Novell's MHS, UNIX/SMTP networks, as well as DEC's VMSmail and Message Router. Wingra also provides document conversion via KEYPak technology from Keyword Office Technologies Inc. "We don't do hardware," says Rassner.

AGENTS IN THE ARCHITECTURE

BUT HP DOES HARDWARE. And software too. So, HP is filling the need for enterprise E-mail with HP OpenMail, its client-server messaging backbone. Messaging backbones like HP OpenMail offer several attractive features for those struggling with legacy and LAN E-mail integration.

According to Morris Jeffries, marketing messaging manager at HP, IS managers who have gone to a departmental solution with LAN-based E-mail "have found that they are now [having problems] in the areas of directory management, troubleshooting and with the fidelity of messages."

But large companies are not the only ones discovering the limitations of PC LAN-based electronic messaging, so are the LAN E-mail vendors. For evidence, look no further than Lotus' and Microsoft's technology directions concerning their next generation E-mail architectures. Both have plans for client-server E-mail models. Lotus' Notes/Lotus Communication Server (LCS) is an all-in-one approach using cc:Mail. Microsoft's Enterprise Messaging Server (EMS) uses its own Microsoft Mail product linked to their NT Advanced Server.

But Mike Rothman of the META Group (Reston, Va.) observes, "HP is the only vendor selling a product." Microsoft's EMS solution is expected in late 1994 and Lotus' LCS not until 1995. Says HP's Jeffries, "We have a tremendous opportunity to capture a significant amount of the marketplace for an enterprise client-server level electronic messaging backbone."

OpenMail supports several different PC-based E-mail APIs: Lotus Vendor Independent Messaging (VIM); Microsoft's Messaging Application Program Interface (MAPI); Common Messaging Control (CMC); P7; as well as HP's own UAL. And OpenMail supports GUIs for DOS/Windows, Macintosh, HP-UX/Motif, Sun Solaris and character terminals.

Front-end clients (or mail user agents) include Lotus cc:Mail and Microsoft Mail for DOS/Windows PCs, Applix Aster*x and Clarity Rapport for UNIX workstations as well as HP NewWave Mail, AdvanceMail/T1 for terminal and AdvanceMail/PC for MS-DOS users. According to Andrew Ransom, marketing product messaging manager at HP, "We are separating the client portion from the backed server portion to offer as much flexibility as possible."

Running on an HP 9000 system, the OpenMail server provides a X.400 compliant message store and directory services. OpenMail also integrates with X.500 directories via the standard XDS interface. Mail transport protocols include X.400 and SMTP today. MIME-compliance is forthcoming in the third quarter of 1994.

Currently, you can get 5,000 users per server, but with heavy usage in a normal configuration its more like 2,000 concurrent users, states Jeffries. The VIM API enables Lotus Notes users to use cc:Mail as a client and HP OpenMail a back-end engine. For example, "When a user says mail a message or mail this attachment [in Lotus Notes] its actually talking to OpenMail," explains Jeffries. So in effect, you have a Lotus back-end for information management and an OpenMail back-end for messaging transport and delivery.

With 9,000 mail boxes in the United States, HP OpenMail is working well for Northwestern Mutual Life (Milwaukee, Wis.), the 8th largest life insurance company in the United States.

"Anytime we can move someone off our mainframe legacy mail system, it saves us from having to buy a bigger, faster mainframe," says Blane Woodard, technical systems manager for Northwestern. "We use MS Mail in the home office as a client and out in the field we've written a DOS-based client that enhances our older proprietary system." As a true client-server solution, "its very friendly to our network," he says. "Many

people don't understand that you can implement cc:Mail or MS Mail without implementing their post offices."

By swapping out PC-based post offices with a HP server and letting the end user perceive no difference, HP OpenMail scales very well. Northwestern Mutual has OpenMail servers spread across the country and two in the home office.

CATCHING SOME ZS

IF YOU ALREADY HAVE DOS/Windows, Macintosh and UNIX workstation clients, then you can integrate them by using Z-Mail from Z-Code Software (Novato, Calif.). "Z-Code is an intelligent, rules-based user agent engine that runs against open systems messaging transports," according to John Payne, director of strategic development for Z-Code. Clients (mail user agents or MUAs) plug into standard SMTP or X.400 transports (mail transport agents or MTAs).

"We provide client software for native Macintosh, Windows and Motif, as well as character-based UNIX that use TCP/SMTP/MIME environments so that users can leverage the existing infrastructure by reusing and extending their E-mail assets." For example, in an HP OpenMail environment, because HP OpenMail servers use SMTP, Z-Code can be used as a user

agent, transmitting OpenMail messages received or created by OpenMail clients via the SMTP transport protocols.
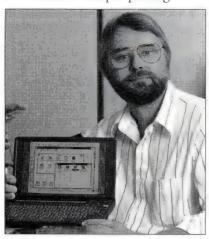
But there's more than one way to send E-mail on a messaging backbone. Control Data Systems Inc.'s (CDS; Arden Hills, Minn.) Mail★Hub provides what's best described, according to Robert Anderson, manager of CDS' electronic messaging marketing, "as a X.400/X.500 backbone with distributed switch technology."

Unlike HP OpenMail which uses HP PA-RISC hardware and a HP-specific message store, CDS' Mail★Hub provides for native post offices on its server platforms (HP-UX, Sun Solaris, IBM AIX or Novell). Mail★Hub also supplies a number of native gateways to cc:Mail, Microsoft Mail, Novell MHS-based mailers, Lotus Notes, Novell GroupWise 4.1 and Macintosh QuickMail. Mainframe connectivity is provided by gateways for DEC VMSmail, ALL-IN-ONE as well as IBM's PROFS and Office Vision/VM/MVS/AS400.

Anderson says CDS' Mail★Hub is focused on gateways and the address books associated with the various legacy and LAN-based mail applications. Whereas HP OpenMail uses third-party gateway vendors like Boston Software (Boston, Mass.) or SoftSwtich (Wayne, Pa.), CDS provides their own distributed gateways. For the address books, Mail★Hub provides X.500 directory synching products like Banyan's StreetTalk.

What it all comes down to this: messaging is an enterprise-wide activity. At one time, E-mail only affected how your employees communicated with each other. Now it's clear, E-mail is becoming the pipeline for electronic commerce on a worldwide scale as companies conduct business-to-business communication between and among each other. "Last year we just focused on getting E-mail from point A to point B. This year, we are seeing more interest in enterprise-wide directories," says CDS' Anderson.

As the E-mail infrastructure grows and the technology matures, companies will be able to take advantage of messaging-enabled applications (MEAs) to foster collaboration and workflow. The integration of those technologies are the next challenge for E-mail vendors like HP and CDS.

The EMA has concluded that after voicemail, E-mail is now the preferred medium for exchange for inter- and intra-corporate communications. Some analysts predict that by 1996 there will be 25 million public service E-mail users, and by the year 2000 some believe there will be 13 million users of wireless E-mail. With the right standards-based messaging infrastructure, the world can be at your door.

Miles B. Kehoe

The Winds Of Change

Change looms on the horizon. By this time next year, most of us will have first-hand experience with at least two of three new major Microsoft operating system releases. Representing a bold leap in technology, all three releases — code named Daytona, Chicago and Cairo — feature full 32-bit implementation, backward compatibility and some powerful new enhancements.

WINDOWS NT COMES OF AGE

Windows NT, the first 32-bit operating environment from Microsoft, has been shipping for almost a year. Although it brings a powerful platform to the enterprise, it is severely limited because it relies on MS-DOS as its foundation. Consequently, it has inherited all of the limitations we've been frustrated with for years: eight character file names, relatively slow and inefficient file systems, and a 16-bit architecture.

The next release of Windows NT (version 3.5), aka Daytona, marks what I believe is Microsoft's first "professional quality" release of NT. It features powerful and flexible networking capabilities that let Win NT systems fit anywhere in a corporation. And, with its Advanced Server edition it's primed to serve as an engine for enterprise computing.

Like its predecessor, Daytona can use MS-DOS as its foundation; but unlike earlier versions, Daytona doesn't require MS-DOS — it is finally a Windows operating system. However, giving up MS-DOS doesn't mean giving up MS-DOS compatibility. An important feature of Daytona is its ability to emulate MS-DOS to execute existing applications.

While Microsoft continues to position Daytona as shared resource or file server for networked Windows systems, it offers a great opportunity for power users and programmers to begin experimenting with 32-bit or multithreaded applications right away.

NEW YEARS IN CHICAGO

After spending a New Year's holiday in Chicago, I know I'd rather be anyplace but on the Lake Michigan shoreline in winter. But by December the direction of the computer winds will be turned toward Chicago. Not the city, of course, but the new Windows client software. Although some people have called the Chicago release "Windows 4," I've heard rumors that the product will be marketed as "Windows 95."

No matter what it's called, Chicago will finally bring full 32-bit computing to the desktop. Unlike Daytona and other Windows NT releases, Chicago is intended to replace Windows 3.1 and Windows for Workgroups 3.11 on everyone's desk. Those of you who have used NewWave will feel right at home with Chicago.

In fact, the first time I saw Chicago working, it had the same dark green

Microsoft's new releases — code named Daytona, Chicago and Cairo — feature full 32-bit implementation, backward compatibility and some powerful new enhancements.

desktop that I've known in NewWave for years. Documents and applications are represented by icons. You can drag-and-drop documents onto applications or just double-click the document icons.

Because Chicago does not depend on MS-DOS, file names are no longer limited to eight characters. However, using a scheme similar to NewWave, Chicago maps long file names into unique eight character file names when you use existing Windows and MS-DOS applications.

Speaking of file names, you're likely to hear what we now call files referred to as objects in Chicago — more shades of NewWave. However, Chicago will store file extensions, or file types, along with the visible document name and the operating system will use a scheme much like the existing Registration Database to map applications to document types.

In the first release of Chicago, Microsoft will be giving up some of the traditional "power user" features. The Windows Recorder is likely to be missing, as well as a variety of other applications. Help will be much improved, with hypertext links between the help screen and the system utilities. For example, help on setting the system time will include a link to the Date and Time module of the Control Panel to change the time directly. This should make things easier for novices as well as for those of us who support them.

LOOKING FORWARD

Even further away from Chicago is Cairo, the eventual replacement for Windows NT. Don't expect to see this release until 1996. Cairo is to Windows NT what Chicago is to Windows. Like Chicago, it will feature a brand new user interface (probably one like Chicago). But like Windows NT, it will be the workgroup system that most individuals don't use at their desks. Because its release is so distant, it's hard to know just what will be included. But one thing is for certain — we'll probably wonder how we got by with plain old Windows 3.1.

—Kehoe's Internet address:
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Pave The Way To PC Integration

I ntegrating PCs is one of the hottest topics at HP presentations.

Everyone wants to understand what it means and how to accomplish it. So, just what are the steps companies go through in order to bring in PCs and LANs? Why do they feel driven to do so? And finally, what are some things you can do to help pave the way to PC integration?

Dana Bursk of Broughton International (Cincinnati, Ohio) works directly with customers designing and installing networks. She has seen many customers evolve from absolutely nothing to complete LAN-based systems. Because this process is so common and follows the same basic steps each time, Dana has created a simple diagram called "Dana's World," to depict the integration migration. You'll probably find your own company somewhere on this LAN-based evolutionary scale.

The beginning of Dana's World shows a computer which has numerous terminals connected to its serial ports. Even though a new MPE/iX machine comes equipped with an Ethernet connection, serial ports are still the connection of choice. Even as PCs are brought into the company very little thought is given to connecting the HP 3000 to a LAN. This may seem even more surprising when you see some companies establishing depart-

mental LANs during these first few years of evolution.

Eventually in Dana's World, the users decide they need their PCs connected to the HP 3000. This may occur because they finally need access to data, or they just don't want a PC *and* a dumb terminal on their desk. At this point they buy a copy of WRQ's Reflection software and connect the PC to the HP 3000 using a serial connection. If a LAN does exist, it is not unusual to find users in a department sharing printers and programs from a file server, yet still have their PCs connected to the HP 3000 through a serial port.

But as businesses grow, PC users soon need access to more than one host. Like "good" users, they refuse to use hardware devices to switch their serial connection between the two hosts. After all isn't that why we have a LAN in the first place? Somewhere in this evolutionary step, the corporate purse is opened and the whole facility is finally connected together on one big LAN. Copies of WRQ's Reflection Network Series are purchased and now every PC can reach every host with ease. You have now entered the brave new world of networking, and the end of Dana's World.

As you can probably imagine a lot of money gets spent by the completion of the process. Why do companies find it important to proceed with PC integration?

The answer according to Birket Foster of M.B. Foster Associates (Chesterville, Ontario) is to get access to data which will allow them to make better decisions. He explains that users spend 80 percent of

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That's because there was really no reason to worry. Dave, like managers at more than 3,000 organizations around the world, knew he could depend on Unison Software's networked systems management solutions to keep not only his mission-critical applications running, but all his other processing as well. Unison's products were designed for distributed systems from the outset—redundant management platforms take over if there's a failure of the primary host or network links to the primary. Unison Maestro, Load Balancer and Express are reliable, commercial-strength workload management products for distributed computing. Across both the network and the enterprise. On all the most popular UNIX and open systems platforms. And the products are supported by Unison's nearly 10 years of experience helping companies manage demanding commercial processing environments. So if you'd rather have your managers going to lunch instead of going berserk, call Unison Software today.

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their time reading data. Only 20 percent of their time is spent updating files. Therefore users need easier access to data for decision making.

The term client-server comes to mind when you think of hooking PCs to HP 3000s. However, it is important to understand that the technology to handle client-server transactions, which updates files across networks, is still in its infancy.

Users spend 80 percent of their time reading data, and only 20 percent of their time is spent updating files.

Questions regarding the best way to handle locking, sequencing file updates and just tracking who has what record on the LAN remain to be answered. Client-server applications, which only require read-access to data, are much simpler to do and there are many such tools available to the PC user.

The next problem is how to get the data from the computer system to the user. After all, the user just wants their data and generally doesn't care how it gets there. Most of us consider the installation of PCs and a LAN the only solution to this problem. Some companies though, may find a LAN too expensive. One alternative is to stick with serial connections. Fransen/King Ltd. (Fircrest, Wash.) has a product called OFFICE EXTEND which allows you to create a serial network. With this product you can share printers, back up your PCs and make the HP 3000 a server for sharing important data files.

Numerous other tools are being upgraded for the client-server future. For example M.B. Foster's DataExpress is a query tool which allows you to access HP 3000 files and either generate a report or download the results to your PC. A new version due out this year will take advantage of several enhancements in MPE/iX 5.0. Through the use of these enhancements, the new version of DataExpress can be accessed via ODBC- (Open Database Connection) compliant products running on a PC. Data from IMAGE databases, KSAM files, MPE files and Cognos Dictionary files can be accessed through products such as Microsoft Access which support ODBC. Now users can join information from a variety of sources into their applications. DataExpress also will work over serial and LAN connections.

How do you get prepared for the eventual evolution to LANs? The first way is to educate yourself and your staff about networking and PCs. Using this education, you can begin to formulate a plan. The first thing in your plan should be to prepare your infrastructure. By doing this now, you begin to reap its benefits immediately.

By infrastructure, I refer to the cabling required to support your current serial connections and future LAN requirements. Even if you are not planning a LAN, it makes sense to stop soldering wires and start using modular cabling plans. These cable plans support just about any type of network you want, as well as serial connections. If you begin to install the newer Category 5 wiring, also known as Level 5 wiring, not only will the modular connections make it easier for you, but it also will support future 100 MB Ethernet LANs. Doing it now will reduce that expense later when a LAN is close to becoming a reality.

Your company's evolution to PC integration will be one shared by many and is certainly not an easy one. Yet the benefits to getting data quickly to users makes it worthwhile.

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cahoon@cardinal.com

You Might Be Surprised By What Some Financial Management Software Vendors Mean By Client/Server Architecture.

Before you invest in accounting software that promises client/server functionality, you better be sure it isn't based on a make-shift architecture.

While most software vendors claim they have "true" client/server systems, you may be surprised to find many who simply patch front-end gadgets onto their existing accounting software and label them "client/server." The fact is that these imitation client/server systems were not designed with the flexibility to meet the diverse needs of your users or to access real-time financial information without being hindered by performance issues.

At Mitchell Humphrey & Co., there are no surprises. Our latest release, FMS II, was designed from the ground up with flexible client/server implementation and high performance as primary goals. You can choose where and how the processing will take place and still be confident FMS II will provide consistently powerful functionality.

The object-oriented design and layered architecture of FMS II is portable across the HP 3000 and HP 9000 platforms, as well as a wide variety of data bases, networks and graphical user interfaces. Furthermore, FMS II has tools for customizing screens, menus, function keys and forms, along with powerful scripting features for automating repetitive tasks.

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CIRCLE 154 ON READER CARD

Some Of This And Some Of That

Question: When is a GIF not a GIF? Answer:

When it comes from a PC, of course. Turns out there are many GIF formats. If you try to take a GIF file that displays fine on all PC GIF viewers and then transfer that same file to an HP workstation, there's trouble. This is because the **imageview** idea of a GIF file is **xv** and **xgif** images. I have been told you can sometimes edit the first few characters in the file which describe the type and version of a file (such as **gif87** to **gif87a**). Although I have not had much luck with this method, I am sure there are some versions you can lie about. The easiest method of viewing image files from a PC is to use the software available on the PC to convert the file to a TIFF format.
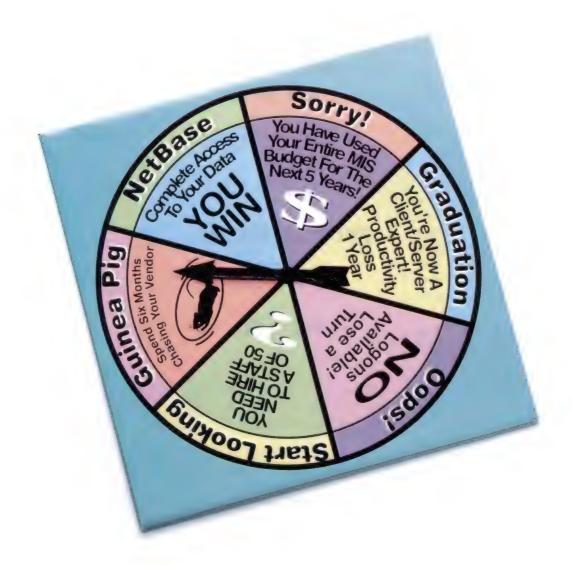
There are many packages on PCs such as scareware (shareware — free) and commercial packages that allow you to convert file formats. The advantage of using TIFF files is that the same file can be viewed with HP-UX's **imageview** command and most PC image viewers. Another benefit is the speed that TIFF files load at, often a 10 fold decrease in time. Be warned that some PC packages allow you to save TIFF files in several compression formats which may or may not be compatible with other systems. So, if a GIF file, when viewed with **imageview**, gives a "file not viewable" error message, try using a PC to convert it.

WHO AGAIN

I have talked about the **who** command in the past, but there is another command I was not aware of. It is much faster and gives more information. I read about it and thought "too bad HP-UX doesn't have that command." Well, it turns out it exists, but has no man page or reference to

Figure 1

```
$ w
   8:07pm      up 11:34,       3 users,   load  average: 0.17, 0.11, 0.11
User          tty             login@    idle  JCPU    PCPU  what
fredm         console         10:40am   11:34                /etc/getty -h console
console
fredm         ttyp1           10:40am   1                    w
fredm         ttyp2           10:41am   7:53  2:34    2:34  /opt/ileaf6/hp700/bin/ileaf6
real          0m0.33s
user          0m0.02s
sys           0m0.06s

$ who
fredm         console         May 26 10:40
fredm         ttyp1           May 26 10:40
fredm         ttyp2           May 26 10:41

real          0m1.51s
user          0m0.03s
sys           0m0.07s
$
```

it from another man page that I can find. The command is **/usr/bin/w**. *Figure 1* shows a comparison of outputs.

Notice that the **w** command ran in .33 seconds, and the **who** command took 1.5 seconds. Also notice the information presented. The article I read was using a script to look for idle processes and kill them. Don't laugh, in certain operating environments that can be a good thing to do. Probably not on engineering workstations though. The **w** command uses keyboard input to determine idle. The **who** command uses screen output to determine idle. Doing the usual **strings** command against **w** provides us with some garbage, as well as what I was looking for, the usage information:

```
Usage: %s [ -hlsuw ] [ user ]
```

The **–l** option appears to be long format, which is the default, as the output is the same. The **–s** option is for short output, it does not print load information. The **–h** strips the header (good for reading with awk, sed, perl or the report generator program du jour). The **–u** gives only the summary of users, and **–w** doesn't seem to do anything, at least I can't figure it out. How about it you wizards?

BATCH COPIES AND MOVES

A command like: **cp ★.test ★.good** would be great for copying all files ending in **.test** to the same name but with a **.good** extension. Too bad it won't work. The **★.good** wouldn't match anything, so the command would not work as described above. What it would do depends on the shell it was invoked in. This type of command also would be great for saving a dated version of multiple files, or moving files to another name. Well, it can be done many ways, with programming language, such as awk, sed, perl, c or the shells. The method given below is for the command line, but could have been written as a program, with all the methods given below. Adding a suffix to filenames generated with wildcards:

```
ls -d t* | sed "s@.*@cp & &.save@" | sh
```

Don't Laugh, in certain operating environments, scripts that look for idle processes and kills them can be a good thing to do.

This copies all files that begin with **t**, to a file with the same name, and a **.save** suffix. Here is how:

We created a list of names with **ls**, the **–d** is to prevent directory recursion. These names are sent to **sed**, which matches the entire name **\(.★\)**, then changes it to the string **cp**, then the name that was matched **&**, followed by the name again with the suffix added **&.save**. We then pipe the output of this to the shell to be executed. In this case we used **cp**, but **mv** would work also.

Changing a suffix is similar:

```
ls -d *.save | sed "s@\(.*\)\.save@ mv & \|.new@" | sh
```

This changes the name of a file that ends in **.save**, to end in **.new**. For example the file **test.save** would now be **test.new**.

To test the above lines, leave off the **| sh** and the output will come to the screen for proofing.

YOU USED IT WHEN?

Some UNIX systems give you a command called **stat** that reports all the information that an **ls –l** gives, plus one important piece — last access time (often called last time used). This information can be rather handy, and can be gotten easily with the system call **stat**. Below is a perl

program that lists this information. Note that this could be written in C also. The program takes file names as arguments, and uses the while loop to assign the variable **$file** to each name on the command line in sequence. Inside the while loop we use the perl function **stat** to return only the eighth field of output, which is the last accessed time. This is assigned to the variable **$access**.

The problem is that it is returned in UNIX time, so we then use the **localtime** operator to convert it to a usable time. In this case we pulled out several pieces of the entire returned value, elements 6, 3, 5, 2, 1 and 0 which correspond to: month, day, year, hour, minute and second. Finally we perform a **write**, which will use the format defined for writing to STDOUT.

Here is a sample run of the program

```
#!/usr/local/bin/perl
print "file:           was last accessed:\n";
while ($file = shift(@ARGV)) {
    $access = (stat("$file"))[8];
    @at = (localtime($access))[6,3,5,2,1,0];
    write;
}
format STDOUT =
@<<<<<<<<<<<<<< @>/@>/@:@>:
@$file,         $at[0],$at[1],$at[2],$at[3],$at[4],$at[5]
```

above, named stat.pl:

```
$ stat/bin/etc/passwd/users/fred/hp_prof
file:            was last accessed:
/bin             5/27/94 8:37:9
/etc/passwd      5/27/94 15: 5:0
/users/fred/hp_pr 3/31/69 18: 0:0
```

Note that for simplicity, no error checking was done in this program. Also notice that in the above example the pathname for the last file got truncated, because the format did not specify enough characters for long pathnames.

Mallett's Internet address:
frederm@aol.com

LIGHTS OUT OPERATION

23:30

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Defining The Objectives

Object technology is new, so few advocates have the experience to declare their doctrines infallible. Fortunately, some authors are finally beginning to provide a little enlightenment. One such view appears in *Object-Oriented Modeling and Design* by James Rumbaugh, Michael Blaha, William Premerlani, Frederick Eddy and William Lorensen.

It provides a coherent discussion of an object-oriented development methodology called Object Modeling Technique (OMT). Sometimes it is called the GE-Rumbaugh method, reflecting its origins at General Electric.

OMT is independent of any programming language; it's about building objective models for analysis and design, not a "how to" for programmers. The central theme of OMT is the importance of modeling any complex application before trying to construct it because a well-designed model has a better chance of becoming a satisfactory product.

OMT offers a method for representing multiple views of a problem. Each view models the appropriate level of abstraction at any stage of the software project. By selecting the right level of abstraction, a designer can simplify design decisions early. Of course, Grady Booch has been nagging us for years about just how hard it is to select the "right level of abstraction."

Rumbaugh, et al., stress the need for more than one view of something as complex as a software product. Although different in notation, the new version of the Schlaer-Mellor method is very similar. And the Booch method has a good track record for modeling and building successful large-scale projects over a long period of time. However, OMT is unique in its approach to decomposing an object-oriented method into separate, but integrated views of a system architecture. Therefore, OMT provides three models for a software domain: the object model, the dynamic model and the functional model.

The Object Model. The most important part of the OMT method, the Object Model provides the central framework into which the other models will be included. Without it, there would be no OMT. Instead, it would resemble a combination of Chen E-R diagrams melded with the Hatley-Pirbhai method. Instead, the object model is a technique for representing object classes, their relationships, attributes, shared attributes, operations and roles.

As with most software methods, one of the hardest tasks is getting comfortable with the author's symbolic notation. But learning the symbols for OMT should not be too difficult for anyone familiar with Entity-Relationship modeling. The subtleties manifest themselves in the way

OMT presents a notation that is easy to learn and facilitates the modeling of some complex object associations.

OMT distinguishes between "roles," "associations," "qualifiers" and "link attributes." Inheritance and instantiation are pretty clear with OMT.

The basic building block of an object model is the "class object" or simply "class." Class has a name, a set of attributes and a set of operations. A class is a template for the creation of objects. Every object is an instance of some class. OMT presents a notation that is easy to learn, and facilitates the modeling of some pretty complex object associations.

The Dynamic Model. One of the key properties of a software object is its ability to change state. OMT adds the familiar State Transition Diagram (STD) to its modeling method. STDs are a familiar tool to embedded systems software engineers and the developers of OMT recognized the importance of this view for system modeling.

To accommodate real-time embedded systems, the dynamic model includes notations for event triggering, guarded state transition, initialization and finalization, and passive or active state models. In addition, the notation permits modeling concurrency, synchronization and state generalization.

The Functional Model. The authors of the book have adopted the Data Flow Diagram (DFD) and its associated constituents to represent the functional view of a system. There are object-oriented purists who denigrate this part of the method as some sort of compromise. The fact is, every model must eventually become software, and software will have a functional component, and it is useful to have a model of that functional component.

DFDs have been refined over the years as a method for modeling system functionality, and the choice to include them in OMT was probably correct. The Schlaer-Mellor method also includes DFDs. Booch rejects the DFD for several important reasons. One reason is the temptation to use DFDs at the wrong level of abstraction. OMT emphasizes using the DFD as a low-level component of an object model, not as a substitute.
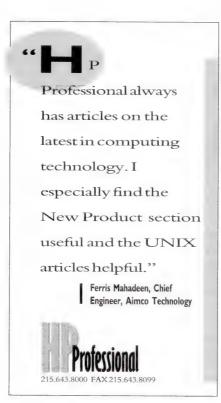
OMT permits building abstractions that map well to the application domain. However, a few application developers have told me they have trouble with mapping an OMT model to the implementation tools — the computer languages. But, as the CASE tool developers become more successful in building products to support OMT, the implementation concerns will fade away. Already, several of the OMT CASE products generate programming source code.

Riehle's Internet address:
riehle@cardinal.com

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new Products

SOFTWARE

DataExpress Links PDL To HP 3000 Systems

M.B. Foster announced a new version of DataExpress that interfaces with the new PowerHouse PDL dictionaries giving HP 3000 end users easy access to host-based enterprise information.

DataExpress channels information from HP host systems to client desktops, whether users access the host via PCs or terminals. The software translates HP host data into PC formats like Lotus, Excel, dBase or WordPerfect, using a consistent interface.

Support for the Cognos dictionary format, PDL, is included in release 1.73 of DataExpress. This features helps PowerHouse users make the transition to newer versions of Cognos' installed 4GL.

Contact M.B. Foster Associates, P.O. Box 580, 50 Water St., Chesterville, ON K0C 1H0; (800) 267-9377.

Circle 400 on reader card

UniWorx Enhances UNIX Education Products

UniWorx announced several product modifications to its family of UNIX education software products. New features include foreign language versions and support for HP's UNIX derivative.

The UNIX Voyager, a user-friendly training software that helps PC users learn UNIX basics, is now available in Spanish and Portuguese. Cost is $99.

The Learning Kit For UNIX, a comprehensive operating system training program that incorporates five training modules, supports the DOS and HP platforms. The HP version will contain about 140 hours of interactive training and will cost $1,150.

Contact UniWorx, P.O. Box 910154, San Diego, CA 92191-0154; (619) 563-1004.

Circle 399 on reader card

Reasoning Systems Offers Software Toolkit For HP

Reasoning Systems announced the availability of Software Refinery, a rapid development environment for building software analysis and conversion tools, for HP 9000/7xx workstations.

Software Refinery reduces the cost and risk of maintaining legacy systems by allowing users to develop tools that automate key maintenance tasks — for example, reverse-engineering tools that help programmers understand and modify unfamiliar legacy systems; conversion tools that port code between programming languages, operation systems and databases; and quality assurance tools that pinpoint bugs and unmaintainable code.

Software Refinery can be applied to any programming language and maintenance task. A unit-level incremental compilation and dynamic linking provide a fast edit-compile-debug loop.

Price is $19,600 per license with volume discounts available.

Contact Reasoning Systems, 3260 Hillview Ave., Palo Alto, CA 94304; (415) 494-6201.

Circle 398 on reader card

Pure Software Releases Quantify

Pure Software announced Quantify, a software product that identifies the portions of an application that slow down execution.

It reduces the risk of introducing performance bottlenecks throughout development; exposes the impact of individual function, library or operating system calls on your program's performance; and provides developers with the power to improve application performance.

By displaying performance in graphical and text formats, Quantify enables developers to analyze run-time execution and eliminate the guesswork involved in optimizing an application's performance.

Quantify's add-on scripts can automat-ically compare runs to track your performance improvements or merge data from multiple runs.

Quantify supports C, C++ and FOR-TRAN.

Contact Pure Software Inc., 1309 S. Mary Ave., Sunnyvale, CA 94087; (408) 720-1600.

Circle 397 on reader card

BBN Systems Provides Speech Recognition

BBN Systems announced HARK Recognizer, a real-time, continuous speech recognition software product that runs on audio-equipped UNIX platforms. It gives spoken words the same power as input from a keyboard, mouse or other device.

Applications integrated with HARK Recognizer give end-users the power to command, control, enter and retrieve information — all by voice.

The HARK Recognizer consists of two communicating processes — the acoustic analysis process and the recognition search process.

Features include speaker independence, continuous speech, state-of-the-art algorithms, software-only product, 2,000 word active vocabulary, unlimited personal vocabularies, socket input, telephone- or microphone-quality input and a sophisticated API.

The HARK Recognizer consists of the WS150 and WS2000 (workstation application) and SRV150 and SRV2000 (telephony) series.

Contact BBN Systems, 70 Fawcett St., Cambridge, MA 02138; (617) 873-3000.

Circle 396 on reader card

UniSQL Delivers ODMG-Based C++ And Smalltalk

UniSQL Inc. announced the availability of two object-oriented database interfaces that support the Object Data Management Group's (ODMG) emerging specification for industry-standard C++ and Smalltalk object-oriented

programming language bindings. The UniSQL C++ and UniSQL Smalltalk Interfaces let developers build mission-critical applications that take full advantage of UniSQL's object/relational database and middleware capabilities in a way that is fully transparent to C++ and Smalltalk language environments.

UniSQL C++ Interface and UniSQL Smalltalk Interface are available for Version 2.1 of the UniSQL/X Database Management System and UniSQL/M Multidatabase System on UNIX servers running DEC OSF/1, HP-UX and IBM AIX. Pricing starts at $1,595.

Contact UniSQL Inc., 9390 Research Bldg II, Ste. 200, Austin, TX 78759-6544; (512) 343-7383.

Circle 395 on reader card

Simware And ADP Autonet Provide Remote Access

Simware Inc. and ADP Autonet signed a marketing alliance that will provide seamless remote access for mobile workers.

Simware's A2B connectivity software provides Windows-based PC users access to 3270-based corporate information systems, UNIX systems and other hosts. A2B's built-in scripting language lets users and system administrators automate dial-up and log on sequences using a point-and-click GUI. A2B has been tested for robust, error-free connections over the Autonet X.25-based virtual private network, ensuring trouble-free remote access.

Contact Simware Inc., 2 Gurdwara Rd., Ottawa, ON K2E 1A2; (613) 727-1779.

Circle 394 on reader card

SETPOINT Releases CIM-Desk Software

SETPOINT Inc. released CIM-Desk, a SETCIM layered software product providing an ad hoc tool for SQL access at the desktop. This provides an easy-to-use means of producing reports and analysis of the SETCIM data.

With CIM-Desk, a transparent interface is created between the PC application and the CIM-QL, an SQL for the SETCIM real-time database system. Data is selected by a CIM-QL query and brought transparently into the application. No knowledge of SQL is required because queries are built automatically by a point-and-click method within familiar applications such as Microsoft Excel or Lotus 1-2-3.

SETCIM is used as a process monitor, historian and controller in a variety of industries. It is available for HP-UX, DEC's VMS and OpenVMS, and IBM's AIX.

Contact SETPOINT Inc., 14701 St. Mary's Lane, Houston, TX 77079-2995; (713) 584-1895.

Circle 393 on reader card

SQL Software Encapsulates PCMS In HP SoftBench

SQL Software announced that PCMS is now encapsulated in HP SoftBench.

SQL Software's process configuration management product line enables companies to organize, manage and change their software, hardware and documentation in a well-defined and visible manner. PCMS provides a "closed loop" system by connecting defects and enhancements communicated by the Support Center to Engineering. PCMS then returns the feedback to the support area on the status of fixes.

HP SoftBench is a full-scale environment

for C, C++, FORTRAN and Pascal development. It includes a comprehensive set of integrated program construction tools for developing new applications and for porting and maintaining existing applications.
Contact SQL Software, 8500 Leesburg Pike, Ste. 405, Vienna, VA 22182; (703) 760-0448.
Circle 392 on reader card

Harris EDA Announces EDAvalidator Software

Harris Electronic Design Automation Inc. (Harris EDA) announced its EDAvalidator family of software products for design data verification.

EDAvalidator interfaces with and compliments the traditional CAE/CAD/CAM tool suites from leading vendors, providing for verification and resynchronization of design data throughout the design-through-manufacture process. This ensures proper engineering change order (ECO) and revision control, in single- and multivendor environments, not only as a design moves from CAE to CAD to CAM, but also between different version of a design within the same department.

Harris EDA's object-oriented database, client-server process and CFI-compliant intertool communications allow EDA-validator to work across disciplines and in multivendor environments, thereby enhancing rather than replacing a company's existing electronic design environment.

Prices start at $15,000.
Contact Harris EDA, 7796 Victor-Mendon Rd., Fishers, NY 14453; (716) 924-9303.
Circle 391 on reader card

SSA Ships BPCS/AS For HP 9000s

System Software Associates Inc. (SSA) shipped Version 5.0 of its BPCS/AS client-server enterprise information system for industrial businesses using IBM AS/400s. BPCS/AS 5.0 for UNIX-based HP 9000 business servers also is available.

BPCS/AS (Business Planning and Control System/Advanced Solution) is a software solution for industrial businesses which features more than 60 applications that cover all operations including sales, engineering, distribution, logistics, finance, manufacturing, plant maintenance and quality assurance.

Enhancements include: client-server technology foundation; a GUI; User/Vision, a graphical application that enables users to retrieve information from the enterprise database in the form of custom reports and graphs; support of eight languages; and FastPath methodology.

Prices for BPCS/AS applications range between $1,875 and $17,500.
Contact SSA, 500 W. Madison, Chicago, IL 60661; (312) 641-2900.
Circle 390 on reader card
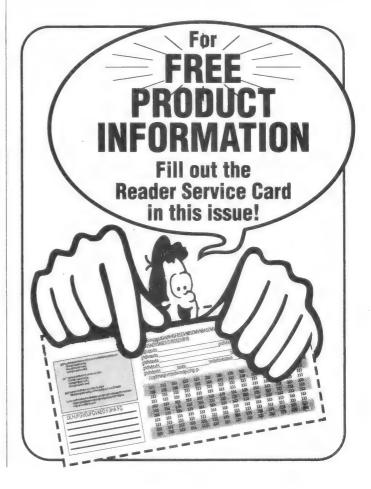
Novadigm And HP Port EDM To HP-UX

HP and Novadigm Inc. announced an alliance to port Novadigm's object-oriented systems management solution, the Enterprise Desktop Manager (EDM) to the HP-UX environment.

Novadigm will develop HP-UX versions of its product line that both companies will cooperatively market. The HP-UX version further extends EDM's UNIX support, allowing systems adminstrators to use HP 9000 servers to configure and manage applications on HP-UX, Windows, DOS, OS/2 or AIX client workstations.

EDM is comprised of three components: EDM:Manager, an MVS, AIX- or HP-UX-based object-oriented server that manages application components, desktop configurations and access policy relationships in a central database repository; EDM:Administrator, a Windows-, OS/2-, AIX- or HP-UX-based systems management workstation for security, application and systems administrators to configure EDM:Manager; and EDM:Client, a Windows-, DOS-, OS/2-, AIX- or HP-UX-based desktop resident facility that synchronizes desktop contents with the current, authorized configurations in the EDM:Manager.

Pricing is $100 per client and $20,000 for the enterprise server.

Contact Novadigm Inc., One International Blvd., Ste. 200, Mahwah, NJ 07495; (201) 512-1000.

Circle 389 on reader card

Visible Systems Acquires Application Browser

Visible Systems Corp. announced the acquisition of development, marketing and support responsibilities for the Application Browser COBOL Reverse Engineering Tool from Hypersoft Corp. The Application Browser is a PC-based tool for the analysis of existing COBOL programs. Graphical representations of existing COBOL programs facilitate rapid understanding of legacy systems whose current source code may be quite different from the original documentation.

The product supports documentation and understanding of existing COBOL programs including: maintenance, functional enhancements, technology changes, architecture changes, migration to new platforms and re-engineering.

Contact Visible Systems Corp., 300 Bear Hill Rd., Waltham, MA 02154; (617) 890-CASE.

Circle 388 on reader card

SQL<>SECURE Available For Client-Server

BrainTree released SQL<>SECURE for identifying security vulnerabilities and securing database passwords in client-server environments. SQL<>SECURE allows the definition and implementation of a database security policy including standards such as password length, reuse analysis, aging and "guessability." It is most valuable in environments that support client-server database applications where the host operating systems authentication (login) is bypassed.

SQL<>SECURE Database Password Manager is a collection of tools and applications that resolves the issues created by the lack of strong security measures at the database level. It is comprised of the following components: the PASSWORD CLIENT; the PASSWORD SERVER; and the PASSWORD CHECKER.
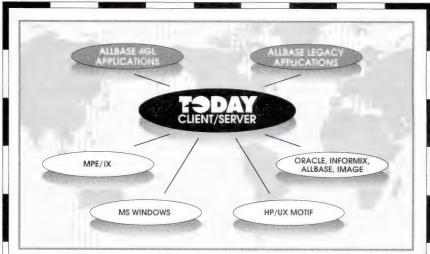
SQL<>SECURE is available for UNIX and OpenVMS systems serving clients such as PCs running Microsoft Windows or workstations in textual and X/Motif GUI interfaces. Price is $7,500.

Contact BrainTree Technology Inc., 62 Accord Park Dr., Norwell, MA 02061-1606; (617) 982-0200.

Circle 387 on reader card

Quadralay Announces UDT For C/C++ V1.3

Quadralay Corp. announced the release of its UDT for C/C++ development environment, a software tool that simplifies design,

implementation, maintenance and management of C and C++ source code and documentation.

UDT for C/C++ consists of five components: a drag-and-drop tool manager that allows developers to integrate existing tools into the UDT environment easily; a powerful C++ class browser with rapid prototyping capability; a fully integrated object-oriented editor; a complete C source code browser; and a hypermedia-based source code librarian and authoring system.

It is available on HP 9000/700, SPARC SunOS 4.1.x, SPARC Solaris 2.x, Intel SCO Open Desktop, Intel Solaris 2.x and RS/6000.

Price for a single architecture right-to-use license is $795. Price for a multiple architecture right-to-use license is $995. Contact Quadralay Corp., 8920 Business Park Dr., Austin, TX 78759; (512) 346-9199.

Circle 385 on reader card

Tektronix Produces Digital Video X Terminal

Tektronix announced a networked digital video capability as one of the multimedia features in their X server software, XpressWare version 7.0. The multimedia features — which include audio, video, imaging and graphics — are available for use with Tektronix' XP100 and XP350 series X terminals.

XpressWare V7.0 includes support for a complete suite of multimedia add-ons. Site license for XpressWare V7.0 is available for $500 on CD ROM. Multimedia capabilities are priced per seat as follows: AudioXpress, $200; VideoXpress, $200; AVXpress (audio/video), $300; ImageXpress, $220; and PSXpress (Display PostScript/Acrobat), $250. Contact Tektronix, 26600 S.W. Pkwy., P.O. Box 1000, Wilsonville, OR 97070-1000; (503) 685-2583.

Circle 384 on reader card

HIBACK/iX Offers Client-Server Backups

HICOMP announced that their backup product, HIBACK/iX, now offers full backup server functionality. STOREs and RESTOREs can be performed on MPE/iX from the following client platforms: UNIX (HP-UX, SunOS and Solaris, DEC Ultrix, IBM AIX, Siemens SINIX, Sequent DYNIX, Silicon Graphics IRIX, Unisys SVR4, Interactive UNIX SVR4 (x86), Apollo Domain, SCO UNIX); MS-DOS and Windows; Novell NetWare, OS/2; and MPE V and MPE/iX.

HIBACK/iX can backup up those platforms to disk, tapes or DAT on the HP 3000. It makes use of multiple TCP/IP sockets to maximize network througput.

Requirements include HIBACK/iX on the HP 3000 server running MPE/iX 4.0 or later; HIBACK on all nodes to be back up to MPE; and a working TCP/IP connection between all nodes.

Contact HICOMP America Inc., P.O. Box 22758, Houston, TX 77227-2758; (713) 626-3654.

Circle 383 on reader card

Algor Provides Houdini Software

Algor Inc. released Houdini, a software package that enables engineers to automatically generate eight-node "brick" finite

elements direction from virtually any CAD solid modeling source, including HP 9000 Series 700s.

Houdini uses Algor's proprietary Merlin mesh enhancement technology to create a high quality surface mesh of highly regular quadrilaterals from a CAD solid mesh. The Merlin mesh then drives Algor's Hexagen software, a fully automatic eight-node "brick" mesh generator.

Houdini works with several CAD/CAM design systems including Pro/ENGINEER, AutoCAD, Aries, Unigraphics, Cadkey, Catia, SDRC and Intergraph.

Contact Algor Inc., 150 Beta Dr., Pittsburgh, PA 15238; (412) 967-2700.

Circle 375 on reader card

Integrated Systems Offers ESp Products

Integrated Systems announced the ESp visual debugging and analysis tool which allows programmers to see the complex interactions of multitasking pSOS applications not possible with previous generation debugging tools.

Using representative icons, programmers

The ESp Analyzer Window helps developers accurately pinpoint code problems.

can customize displays to various levels of detail, see the state of each task, trace its execution and identify where and when events occurred.

The ESp visual debugging tool supports pSOS+ and pSOS+m embedded real-time kernels. The software acts as a target resident agent, collecting and relaying information about the kernels' behavior over a networked or serial connection.

ESp graphically displays pSOSystem component configurations, memory usage

and errors, kernel object inventories, user-specified events and CPU use graphs.

Contact Integrated Systems, 3260 Jay St., Santa Clara, CA 95054-3309; (408) 980-1500.
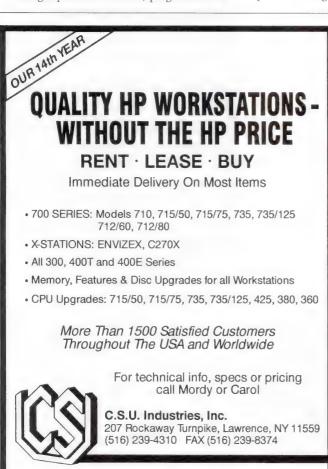
Circle 374 on reader card

O'PIN Systems Updates REVEAL For HP 3000s

O'PIN Systems announced REVEAL 3000 Version 3.3, a new version of its paperless reporting software for the HP 3000. Enhancements include wildcard and rational searching, faster printing with terminal I/O and a means to track report usage, printing and disk space.

REVEAL enables users to view and use online reports from any PC terminal linked to a system, thereby eliminating much of the expense and handling inefficiencies associated with paper-based reporting. REVEAL's Pinpoint distribution module, ensures that users gain access only to those reports and report pages they need and are authorized to use.

REVEAL runs on the HP 3000, MPE V

or MPE/XL and requires an HP or compatible terminal, or a PC that runs terminal emulation software. Current REVEAL users with in-force maintenance agreements may upgrade to version 3.3 at no extra charge.

Contact O'PIN Systems, International Plaza, Ste. 635, 7900 International Dr., Bloomington, MN 55425; (612) 854-3360.

Circle 373 on reader card

Locus Adds Features To PC-To-UNIX Integration

Locus Computing Corp. announced the addition of networking features for its PC Interface products — PC Interface 5.0 and PC Interface Plus 2.0 — which provide transparent gateway access to enterprise services from a single UNIX server.

The new networking features include support for a Windows-based implementation of ftp, local, enterprise-wide and Internet E-mail, file and print sharing, NetWare and Windows for Workgroups co-existence, and enhanced support for Windows desktop systems.

The complete PC-Interface 5.0 package

is $279. PC Interface Plus 2.0 is $449.

Contact Locus Computing Corp., 9800 La Cienega Blvd., Inglewood, CA 90301-440; (310) 670-6500.

Circle 372 on reader card

PC-Interface 5.0 shows DOS, Windows, Macintosh and UNIX files as networked disk drives in the Files Manager.

Infonet X.400 Messenger Ported To HP 9000/800

Infonet Software Solutions (formerly OSIware) and HP announced that they are working to integrate HP OpenMail and

Infonet's X.400-based Messenger 400 store-and-forward server software. The products will connect users of Microsoft Mail, Lotus cc:Mail and Lotus Notes in a single enterprise messaging system.

The integrated mail system will provide advanced routing, standards-based directory services, reliability and scalability to support thousands of mailboxes. Infonet will distribute HP OpenMail through its systems integrators and resellers in North America and throughout the world.

Contact Infonet Software Solutions Inc., 4400 Dominion St., Ste. 210, Burnaby, BC V5G 4G3; (604) 436-2922.

Circle 371 on reader card

FASTCopy Speeds Software Transfer

API International announced FASTCopy, a backbone network engine that speeds software transfer up to 10 times over networks and guarantees software delivery for distributed client-server operations. FASTCopy works over TCP/IP networks.

FASTCopy offers a reliable "deliver and trigger" backbone for batch-oriented

applications. Using dynamic, client-server enabling technology, FASTCopy lets a company's mobile and remote users make complete use of networked applications.

FASTCopy is available as network engine software or included with integration services from API International.

Contact API International, P.O. Box 91027, Austin, TX 78709; (512) 280-4391.

Circle 370 on reader card

Fel Computing Ships LANlink-TCP 4.0

Fel Computing shipped LANlink-TCP 4.0, which connects PC LANs to TCP/IP networks. LANlink-TCP makes it possible to have just one IP address per PC LAN. The product also allows individual user IP addresses to be assigned in situations that require it.

Applications included with the current release allow terminal, file and printer access to TCP/IP networks. A Telnet program provides 3270 emulation while a VT100 terminal emulator provides access to a wide range of systems. LANlink-TCP supports Novell NetWare, Banyan VINES, Microsoft LAN Manager and most PC LANs. All LAN technologies are also supported including Ethernet, Token Ring and Arcnet.

Contact Fel Computing, 10 Main St., Williamsville, VT 05362; (800) 639-4110

Circle 369 on reader card

Hughes' NetLOCK Broadens Multiplatform Security

Hughes Aircraft Co. announced NetLOCK for HP, a software-based, multilayered security for networks of HP workstations.

NetLOCK is installed at the IP layer of the network stack, where it operates transparently to the user and applications. When workstations initiate private communications, NetLOCK automatically generates a public key, which the workstations share to encrypt and decrypt data. Keys are valid for a specified time. After traffic key negotiation, the workstations authenticate themselves to one another by exchanging digitally signed certificates of authentication, at which time data transfers will occur. Once the data is transmitted, NetLOCK inspects the data for alterations by performing security checks and notifies the administrator if a security breach occurred.

Contact Hughes Aircraft Co., Systems Sector, P.O. Box 3310, Fullerton, CA 92634; (714) 732-5352.

Circle 360 on reader card

Blackboard Technology Announces GBB V3.0

Blackboard Technology Group Inc. announced the availability of GBB version 3.0.

Included in GBB V3.0 are: a graphics toolkit, called ChalkBox, that allows developers to easily create object-oriented GUIs that are source code compatible on all hardware platforms on which GBB runs; an event mechanism, which adds an object-oriented event hierarchy to GBB's blackboard-object hierarchy; enhanced retrieval capabilities that allow you to create arbitrarily nested logical query patterns for GBB's high-performance, multidimensional object database; and enhanced tracing and metering capabilities for monitoring applications.

GBB is available for the following platforms: DEC, HP, IBM RS/6000, Silicon Graphics and Sun, as well as Lisp workstations from Symbolics and Texas Instruments.

Price is $10,000 for most single-processor workstations and $5,000 for PCs and Macintoshes.

Contact Blackboard Technology Group Inc., 401 Main St., Amherst, MA 01002; (413) 256-8990.

Circle 359 on reader card

Orion Group Introduces MCBA 5.0 For HP 3000s

Orion Group Software Engineers Inc. announced the development of a new 5.0 version of MCBA software for the HP 3000.

Features of MCBA OG-5.0 include: adding an unlimited comment screen to vendor, customer and item screens; adding a "reminders" function to the system to display logons; fixing some remaining bugs in version 4.5; two extra fields with user defined labels; and the ability to put a job number on print spooled reports screen.

Contact Orion Group Software Engineers Inc., 20 E. 91st. St., Ste. 200, Indianapolis, IN 46240; (317) 846-1780.

Circle 358 on reader card

ParaSoft Announces Insight++ 2.0 for C++

ParaSoft Corp. announced Insight++ for C++ 2.0, the latest release of its automatic, run-time debugger. Insight++ identifies bugs specific to C++ (distinguishing between new, delete, malloc and free). Insight++ supports the latest features available in C++, such as templates, exception handling and RTTI.

Utilities included with Insight++ include: Invision, a unique algorithm validation tool; InUse, a graphical "Malloc Monitor" which

helps in understanding how a program manipulates memory by graphically displaying how it allocates and frees memory as it runs; and Total Coverage Analysis (TCA) which provides information about which pieces of code have been tested, how much code was tested and how many times different code blocks were executed.

Insight++ is available for the HP 9000, IBM RS/6000, Sun SPARC, DEC and SGI platforms. Pricing begins at $1,495 for a three-user license.

Contact ParaSoft Corp., 2500 E. Foothill Blvd., Pasadena, CA 91107-3464; (818) 792-9941.

Circle 368 on reader card

HARDWARE

Ultralink Provides Slotless ISA Bus Expander

Ultralink Inc. announced Ultralink Model 120, which consists of a single PC card and cable which connect a passive ISA backplane to a host PC's parallel printer port. This link allows use of the wide range of data acquisition, control and peripheral I/O cards available for the ISA bus without use of internal expansion slots.

The Link operates with Centronics-compatible and enhanced parallel printer adapters at data rates up to 100 KB per second. Both 8 and 16 bit ISA I/O data transfers are supported. Up to 16 ISA I/O cards can be installed in the passive backplane. The Link incorporates logic which expands address space and interrupt levels available on the expansion backplane.

The Link allows insertion or removal of cards from the expansion backplane without shutdown or opening of the PC. Additionally, the expansion backplane is only active during data transfers with resident I/O cards which reduces backplane electrical noise for sensitive data acquisition applications.

Single units of Link cost $159.

Contact Ultralink Inc., P.O. Box 1809, Minden, NV 89432-1809; (702) 782-9758.

Circle 382 on reader card

Lantronix Releases LTX-TA And LTX-2A

Lantronix announced two miniature Ethernet transceivers — the LTX-TA for connecting to twisted-pair media, and the LTX-2A for thin coax.

The LTX-TA (for 10Base-T networks) offers a switch-selectable heartbeat function, automatic polarity correction, LEDs for

Power and Good Link indications, and an RJ45 network interface.

The LTX-2A (for 10Base-2 networks) also has a switch-selectable heartbeat, plus a single LED (for Power) and a BNC barrel connector for its media interface.

Contact Lantronix, 15353 Barranca Pkwy., Irvine, CA 92718; (714) 453-3990.

Circle 381 on reader card

Telebyte Provides Model 431 Modem

Telebyte Technology introduced its Model 431 Synchronous High Speed Short Haul Modem which provides high-speed data transfer over 6 Km on a single twisted pair. Isolated LANs can be connected, on a dedicated basis, via a pair of Model 431s and a single twisted cable pair supplied by the local telephone company.

The Model 431 uses ISDN technology and its associated 2B+D signalling techniques to provide full duplex operation up to 128 Kbps. The output of the modem is an ISDN U interface circuit that employs adaptive echo cancellation and data scrambler.

The Model 431 allows a control signal to be sent on the RTS (Request-To-Send) pin and received on the CTS (Clear-To-Send) pin of the interface.

Dip switches allowing selection of one of seven rates with selection of internal or external clock. The analog line interface is provided on terminals and an RJ-11 connector. Transmission distance is independent of data rate and strictly a function of wire gauge.

Contact Telebyte Technology Inc., 270 Pulaski Rd., Greenlawn, NY 11740; (516) 423-3232.

Circle 380 on reader card

Boca Offers The BGM64 PCMCIA Diagnostic Card

Boca Technology Group Inc. announced the BGM64 PCMCIA Diagnostic Card, a universal PCMCIA interface diagnostic device. The BGM64 plugs into a PCMCIA compatible slot and allows wrapping the data and address bus through the PCMCIA interface. PCMCIA Host software allows testing of all 16 bits of data on an emulated 64 MB address space.

PCMCIA Host software algorithms which exercise the BGM64 will detect opens and shorts on the data and address bus. The proper functioning of the attribute memory also can be tested.

The PCMCIA Diagnostic Card also

allows thorough testing for 5v and 12v Vpp power supply compliance.

Individual BGM64 Diagnostic Cards are priced at $249. The Developers Kit is priced at $4,500.

Contact Boca Technology Group Inc., 21346 St. Andrews Blvd., Ste. 219, Boca Raton, FL 33433; (407) 750-1528.

Circle 379 on reader card

HP, SSSI Introduce HP 700/70 Terminal

HP and Structured Software Solutions Inc. (SSSI) announced the HP 700/70 Windowing Terminal, a UNIX-based terminal that offers windowing capabilities for running multiple application sessions simultaneously.

The HP 700/70 Windowing Terminal

works with UNIX-based hosts from HP, IBM, Sun, DEC, SCO and UNIX-based PCs.

Fully compatible with ANSI text terminals and the "alpha window" terminal standard, the HP 700/70 is intended for transaction processing, customer service claims processing and applications in which the text terminals are commonly used.

The HP 700/70 comes with a license for SSSI's FacetTerm window management software, a 14-inch monochrome display, keyboard, user's manual and power cord; a mouse is optional.

The windowing system includes pull-down menus, scroll bars, icons and the ability to easily copy and paste data between individual windows. Users can maximize a window to a full-screen-sized display or minimize windows as icons.

FacetTerm allows users to run up to six software applications or connections to networked UNIX-based hosts simultaneously.

The HP 700/70 Windowing Terminal is available in base configuration for $499. An MPR-II compliant version costs $549. The optional mouse is $30 and the Model 700/60 to 700/70 upgrade kit is $69.

Todd Enterprises Inc. Offers The CD-R CUBE

The CD-R CUBE creates CD-ROM disks from files or scanned images.

Todd Enterprises announced the CD-R CUBE, a desktop processing system for CD replication. It creates CD-ROM disks from files or scanned images.

The CD-R CUBE contains a Yamaha CD quad speaker recorder/player as well as an Intel Pentium CPU with 8 megs of RAM and a PCI bus; a 120 meg IDE system drive, a 3.5-inch floppy drive; a doublespeed multisession CD-ROM drive; a 1 GB dockable data drive with Keylock; and a SuperVGA 14-inch monitor, keyboard and mouse. It also comes preloaded with DOS 6.2, Windows 3.1 and easy-to-use Gear CD mastering software.

Contact Todd Enterprises Inc., 224-49 67th Ave., Bayside, NY 11364; (718) 343-1040.
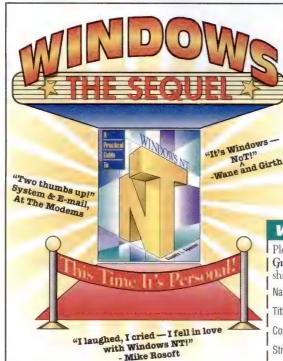
Circle 378 on reader card

Amdahl Corp. Debuts Xplorer 2000 Series

Amdahl Corp. announced the Xplorer 2000 Series of massively parallel processing database servers.

The Xplorer 2000 Series — Model 50 and Model 100 — integrates massively parallel processing hardware from nCUBE with Oracle 7 parallel server relational database software.

The Xplorer 2000 can be configured as System/390 channel-attached, database offload processing for DB2 dynamic SQL queries. It can be accessed through System/

Reader Information

This month's issue contains many advertisements for hardware and software products available for your HP systems. Your investment in these products today could mean a more lucrative future for your company. Use the information below to learn more about the advertisers' offerings, then use the reader information card to initiate your direct link to valuable information about these advertisers' products.

HP Professional

390-compatible processors through as many as eight System/390 channels. It also can be accessed through SQL calls from LAN-based, client-server environments, via Ethernet connection or an FDDI backbone LAN.

The Model 50 is configured with 32 to 64 processor nodes and 10 to 80 GB of disk storage. Processor nodes can be added in 16-node increments and disk storage can be added in 10-GB increments. The Model 100 is configured with 64 to 512 processor nodes and 48 to 1,176 GB of storage. Processor nodes can be added in 32-node increments and disk storage in 12-GB increments. Contact Amdahl Corp., 1250 E. Arques Ave., P.O. Box 3470, Sunnyvale, CA 94088-3470; (408) 746-6000.

Circle 377 on reader card

Concorde Offers 4mm DAT Tape Drives

Concorde Technologies Inc. introduced a family of high-performance 4mm DAT tape drives and tape autochangers. Incorporating second generation DDS-2 storage technology, the drives used in this family of products provide twice the storage capacity of previously available DAT drives. The drives support 4 GB of native mode storage and over 8 GB (typical) of compressed storage per tape cartridge. Autochanger models provide an automated unattended solution to the storage and retrieval of up to 600 GB of data.

Concorde's DAT drives provided 510 KB per second native transfer rate. The burst transfer rate of the new 4mm has improved to 3 MB per second asynchronous and 7.5 MB per second synchronous. Both the high speed cartridge swaps and the fast search capability enable the autochanger versions to deliver a random tape cartridge file access averaging only 90 seconds.

Each model supports all major UNIX platforms and operating systems including HP 9000, Sun, Auspex, IBM RS/6000, DEC and Silicon Graphics via the standard SCSI-2 interface.

The product family consists of a single 4 GB drive — Model HPT4000DC — and three autochanger models — the Model HPT4800CD, Model ADT4MMDC and Model SLT4000CD. Contact Concorde Technologies Inc., 6370 Lusk Blvd., Ste. F100, San Diego, CA 92121; (619) 458-0702.

Circle 376 on reader card

NetFRAME Announces DataJET III

NetFRAME Systems introduced DataJET III, an easy-to-use backup and restore system for EISA-based NetWare servers featuring RAID 5 fault tolerance. DataJet III is a three DAT drive tape array controlled by a multithreaded NLM that guarantees native backup speeds of 3 GB per hour.

DataJet III backs-up the entire server while giving users the flexibililty of restoring individual files. DataJet's menu-driven system, offering only six choices, has been designed to eliminate operator errors. DataJet III is a complete turnkey solution consisting of tape array with three tape drives housed in a compact chassis, a DataJET NLM residing on the server and an EISA SCSI adapter. Price is $14,995. Contact NetFRAME Systems Inc., 1545 Barber Lane, Milpitas, CA 95035; (408) 383-4515.

Circle 367 on reader card

American Digital Systems Introduces RAPS

American Digital Systems introduced Redundant Arrays of Power Supplies (RAPS), a power supply system that improves storage system reliability up to 3200 percent. RAPS uses multiple power supplies with inherently reliable disk drives to achieve fault-tolerance levels much higher than traditional storage systems and without the expense of RAID implementations.

RAPS is incorporated into American Digital Systems' MasterDisk storage subsystem. RAPS supports each disk with its own dedicated power supply. If one of the dedicated power supplies fail, another one takes over. The reliability of the power supply array rises from 25,000 hours to more than 1 million hours. Contact American Digital Systems Inc., 490 Boston Post Rd., Sudbury, MA 01776; (508) 443-7711.

Circle 366 on reader card

Nupon Enhances LTS Series Servers

Nupon Computing Corp. announced that a faster dual processing chipset and improved software have increased the speed of their LTS Series Communications Servers.

The LTS Communications Server Version 1.2 uses an Intel 80386SX-20 and a Cirrus Logic CL-CD 180 communications processor to boost throughput from 38.4 Kbps to 64 Kbps.

Improved software includes dynamic Routing Information Protocol, automatic on-demand dialing, dial-back security and a DOS-based installation program.

The LTS Servers combine the functions of a dial-up router with remote access capabilities, terminal server, printer server and modem server. They can be configured v three protocols: Novell IPX, TCP/IP DEC LAT.

Prices vary depending on the numbr ports needed. Contact Nupon Computing Corp., 1 Warner Ave., Ste. A, Tustin, CA 926 (714) 258-8622.

Circle 365 on reader car

IDE Expands Multi II/III Family

International Data Engineering Inc. (ID announced a new family of high-capa multifunction optical jukebox devices. T Multi II/III systems provide an average load time of 1.8 to 2.5 seconds.

The Multi II/III series gives the flexibi to add from two to six full-height or height drives and offers capacities ran from 119 GB to 270 GB.

The Multi II/III systems can be c figured with write-once, multifunctio erasable optical disk drives produced by IBM Maxoptic, Panasonic, Plasmon I Systems, Ricoh or Sony.

Prices start at $33,900 for the Multi Il $44,900 for the Multi III. Contact IDE, 7727 Washington Ave Minneapolis, MN 55439; (612) 946-41

Circle 364 on reader

Pulizzi Releases Auto Transformers

Pulizzi Engineering Inc. released a new of Auto Transformers.

The Step-Down Auto-Transformer, Mc SDC 2102 reduces the operating voltage f an input of 200-250VAC, single phase to output of 100-125VAC, single phase a maximum of 750VA. It has six NEMA 5-15 outlets, and is protected with a two-pole, 10 amp magnetic toggle circuit breaker. Input is via a six foot cable (AWG 18/3) without a plug, allowing the customer to select the correct termination for his application.

The Step-Up Auto-Transformer, Model SUC 2103 also is available. This system increased the operating voltage from an input of 100-125VAC, single phase to 200-250VAC, single phase at maximum of 750VA. This optional version comes with six NEMA 6-15R outlets which are protected by a 15 amp magnetic toggle circuit breaker. Input is from a nine foot cable (AWG 14/3) with a molded 5-15P plug.

Price for the Model SDC 2101 is $475, and for the SUC 2103 is $515.
Contact Pulizzi Engineering Inc., 3260 S. Susan St., Santa Ana, CA 92704; (714) 540-4229.

Circle 363 on reader card

Excellink Ships EcoNet Printer Sharing Network

Excellink Inc. shipped a new modular printer sharing network that provides printer sharing, file transfer and spooling capabilities for PC and PC-compatible computers. The EcoNet printer sharing network uses standard modular telephone cables that let users create a printer sharing network with up to 32 nodes, any of which can be computers or printers.

The EcoNet network consists of compact transmitter and receiver modules that connect directly to the parallel port of computers and printers. A transmitter module is dedicated to each computer, while a receiver module is dedicated to each printer.

EcoNet uses a 500 Kbps signal with CRC error detection to send multiple signals over the wire simultaneously. This allows users to print to several different printers simultaneously, with virtually no degradation in transmission speed.

The transmitter modules cost $59 each and the receiver modules cost $69 each. A starter kit, consisting of two transmitters, one receiver, two 25 foot cables, a power supply and the utility software costs $199.
Contact Excellink Inc., 1430 Tully Rd., Ste. 415, San Jose, CA 95122; (408) 295-9000.

Circle 362 on reader card

The EcoNet starter kit includes transmitter and receiver modules.

Envoy Data Corp. Markets PCMCIA IC Card Designer Kit

Envoy Data Corp. released the first in a series of Designer Kits for the development of PCMCIA memory and I/O cards. This "one stop shop" contains all the necessary hardware

and information for the engineer to start his design process without a long search for product information. The kit contains hardware from PCMCIA companies like Swart, Bay Area Labels, Gould, Fujitsu, Hirose and Electrotek. Typical hardware consists of lids, frames, pcb's, cables, connectors, card extender, battery and labels.

Also included are catalogs, spec sheets, factory contracts, PCMCIA training manual, and Card and Socket Services software.
Contact Envoy Data Corp., 953 E. Juanita Ave., Ste. A, Mesa, AZ 85204; (602) 892-0954.

Circle 361 on reader card

ADVERTISERS INDEX

Why Not RISC It?

Cooperative Agreement Between HP And Intel Will Be Profitable For Both

By Gordon McLachlan

In an interesting bit of news, HP and Intel recently announced that they're teaming up to design and produce a new processor chip by 1998 or thereabouts. Apparently, this is the 64-bit "post-RISC" architecture that HP has been hinting about for some time, with a slight twist — HP won't be building it.

Not surprisingly, details about the new design aren't available, presumably because the chip hasn't been designed yet. But we can't let that stand in the way of our prognostications, can we?

VERY LONG SHOT?

It is believed that the new chip will be a hybrid, backward-compatible with the Intel x86 CPU, but using something called a "very long instruction word" architecture or VLIW (whatever that is) to speed things up. While one has to assume that x86 compatibility is a given, it's unclear how compatible the design will be with HP's current PA-RISC offerings.

The biggest advantage of the chip — outside of PC compatibility — will be its suitability for use in a wide variety of applications from desktop workstations to super-servers, and a cost structure more in line with PC products than with PA-RISC.

From a business standpoint, the relationship should be a good one for both companies. For HP, the alliance has two immediate advantages: It can develop the new chip for a lot less than it would cost to do it alone; and Intel's manufacturing capacity will provide economies of scale that HP can't touch on its own.

Intel benefits because it doesn't have to worry about the x86 instruction set going away. Intel is concerned about IBM's defection from their camp — developing the PowerPC with Apple and Motorola, and manufacturing Intel clone chips for Cirrus Logic, Cyrix and NexGen — and it needs to take a new product direction to get out of the rut it's perceived to be in.

Without a doubt, Intel got lucky when IBM picked the Intel 8086 CPU for its first PC a dozen years ago, but that luck has now kept Intel from doing anything bold with the x86 microprocessor family. As a result, Intel is continually plagued by accusations that its chips are "old" and has been flayed by technoids touting the advantages of one RISC design or another over the x86. A clever new chip should help silence those critics.

LIFE AFTER P7

Inevitably, the alliance invites comparisons to the IBM, Apple and Motorola PowerPC partnership, but considering the new chip isn't expected to hit the market for 28 dog-years, it's hard to characterize it as a PowerPC killer. Still, it shows there may be life after P7 and PA-RISC, and therefore forestall erosion of both markets.

Although they are quite capable of designing and building the hardware on their own, Intel will have to sink a lot of effort into developing compilers and other software to make things work. Here too, it makes a lot of sense to split the difference in a joint venture, and HP's stature as the number two computer manufacturer gives the alliance the credibility it needs to make the cut.
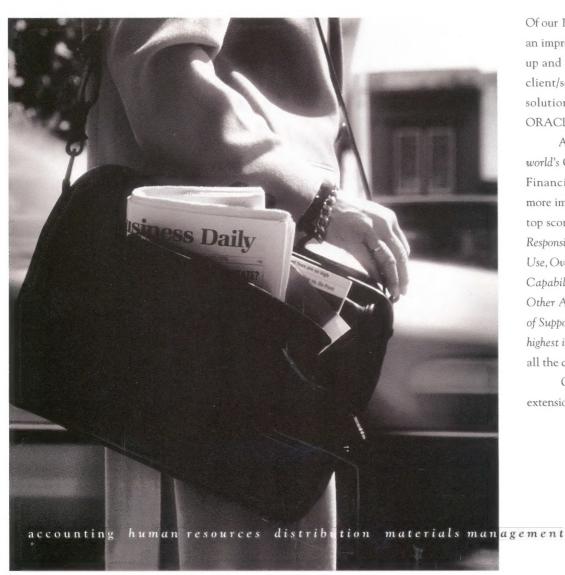
Thinking longterm, HP can be reasonably certain that it isn't making a big goof on its next generation processor. If nothing else, HP knows that an Intel-compatible chip will be able to run industry-standard as well as HP-UX software, and they won't have to worry about porting it on their own. Given HP's troubles with LAN Manager, Portable NetWare, "native" NetWare and its waffling on Windows NT, this alone should make some people in HP management happy.

In effect, this alliance will take HP out of the hardware game. These days, the real money for HP is in all the "value-added" stuff they're pitching — chips, software and services. The hardware is little more than assembled kits of standardized components, and the assembly doesn't have enough of a profit margin. So more and more vendors sell hardware so they can sell software. One day soon, don't be surprised to get hardware bundled free with the software you buy.

—McLachlan's Internet address:
mclachlan@cardinal.com

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